REMEMBERING TRAUMA: THE ETHICAL IMPLICATIONS OF MEMORY DAMPENING FOR SEXUAL ASSAULT SURVIVORS

by

Sarah W. Denton

A Thesis
Submitted to the
Graduate Faculty
of
George Mason University
in Partial Fulfillment of
The Requirements for the Degree
of
Master of Arts
Philosophy

Committee:

_____ Director

_____

_____

_____

_____ Department Chairperson

_____ Dean, College of Humanities and Social Sciences

Date: _____ Summer Semester 2017
George Mason University
Fairfax, VA

Remembering Trauma: The Ethical Implications of Memory Dampening for Sexual Assault Survivors

A Thesis submitted in partial fulfillment of the requirements for the degree of Master of Arts at George Mason University

by

Sarah W. Denton
Bachelor of Arts
Emory & Henry College, 2013

Director: Lisa Eckenwiler, Associate Professor
Department of Philosophy

Summer Semester 2017
George Mason University
Fairfax, VA

DEDICATION

This thesis is dedicated to survivors of sexual assault. Remember that your story matters.

ACKNOWLEDGEMENTS

I would like to thank the many friends, relatives, and supporters who have encouraged me throughout this process. My loving husband, Chris, entertained countless hours of me asking questions and provided much needed emotional support (as did our dogs, Tucker and Shaggy). Dr. Rachel Jones also provided me with opportunities to use her as a sounding board and helped me talk things through when I got stuck in the research process. Drs. Peterson, DiTeresi, and Kirkpatrick were of invaluable help as members of my committee. Finally, thanks to my director, Lisa Eckenwiler, for the constant encouragement and dedication to helping me get my project where it is today.

TABLE OF CONTENTS

LIST OF ABBREVIATIONS

American Association of Neurology ..... AAN
American Medical Association ..... AMA
American Neurological Association ..... ANA
American Psychiatric Association ..... APA
American Psychological Association ..... APA
Brain-Computer Interface ..... BCI
Center for Disease Control ..... CDC
Cyclic-AMP response element binding protein ..... CREB
Deep Brain Stimulation ..... DBS
Diagnostic and Statistical Manual of Mental Disorders, 5th Edition DSM-5
Electroconvulsive Therapy ..... ECT
United States Food and Drug Administration ..... FDA
Functional Magnetic Resonance Imaging ..... fMRI
Post-Traumatic Stress Disorder ..... PTSD
Multiple Trace Theory ..... MTT
National Sexual Violence Resource Center ..... NSVRC
Standard Consolidation Theory ..... SCT
Trace Transformational Theory ..... TTT
Transcranial Direct Current Stimulation ..... tDCS
Transcranial Magnetic Stimulation ..... TMS
United States ..... US
United States Department of Justice, Office on Justice Programs ..... USDOJ-OJP

ABSTRACT

REMEMBERING TRAUMA: THE ETHICAL IMPLICATIONS OF MEMORY DAMPENING FOR SEXUAL ASSAULT SURVIVORS

Sarah W. Denton, M.A.

George Mason University, 2017

Thesis Director: Dr. Lisa Eckenwiler

Healthcare providers are increasingly treating sexual assault survivors with memory dampening neurotechnology to alleviate psychiatric conditions caused by sexual assault (Cabrera 2011). However, the effects of memory dampening on the self-narratives—particularly the narratives of sexual assault survivors—has not received much attention in the neuroethics literature. In this paper, I explore the ethical implications of treating sexual assault survivors with memory dampening neurotechnology. Although treating sexual assault survivors with memory dampening technology seems consistent with the ethical obligation to promote patient welfare, and other ethical principles such as fidelity and responsibility (APA 2013, Moses and Illes 2017), I argue that treating sexual assault survivors with this method may generate harm.

Memory dampening treatments for sexual assault may generate harm by perpetuating a reductionist view of the psychiatric problems resulting from sexual assault. A reductionist view misunderstands the problem of sexual assault as a strictly medical problem requiring medical interventions, rather than as a social problem that

encompasses gender norms. The psychiatric problems resulting from sexual assault are not merely rooted in emotional dysregulation. Rather, these psychiatric problems are also contingent on one's social environment. Sexual assault impacts survivors in a variety of ways that are best understood in a social context. For example, stigma, problems creating and maintaining meaningful relationships, and moral injury are all relational harms that negatively impact how survivors relate to others in their social environment (Miller 2009, Nazarov et al. 2015). In a social context, sexual assault survivors construct their idea of who they are as persons through narration (Nelson 2001). Healthcare providers may be increasingly tempted to view sexual assault survivors through the lens of the reductionist model and apply memory dampening treatments. Yet, without addressing the social context of sexual assault, such interventions may exacerbate harm instead of relieving it. I argue that a more appropriate and ethically defensible response to treating psychiatric conditions associated with sexual assault is to situate survivors and their treatment in their social context. This allows healthcare providers to treat sexual assault survivors by crafting counterstories to the biographical narratives that harm sexual assault survivors in the social context, rather than using memory dampening interventions to affect the emotional coloring of the autobiographical narratives of sexual assault.

PART I: WHAT *IS* MEMORY DAMPENING

The National Sexual Violence Resource Center (NSVRC) defines sexual violence as involving "a range of acts including attempted or completed forced or alcohol/drug facilitated penetration (i.e., rape), being made to penetrate someone else, verbal (non-physical) pressure that results in unwanted penetration (i.e., sexual coercion), unwanted sexual contact (e.g., fondling), and non-contact unwanted sexual experiences (e.g., verbal harassment, voyeurism)" (Basile et al. 2016, p. 7). The United States Department of Justice's Office on Justice Programs Bureau of Justice Statistics defines sexual assault as "a wide range of victimizations, separate from rape or attempted rape. These crimes include attacks or attempted attacks generally involving unwanted sexual contact between victim and offender. Sexual assaults may or may not involve force and include such things as grabbing and fondling. It also includes verbal threats" (OJP-USDOJ 2017). For the purpose of clarifying this discussion, I will follow the NSVRC's definition of sexual violence when referring to sexual assault in order to avoid the narrow definition of sexual assault provided by the USDOJ.

According to the NSVRC and the Center for Disease Control (CDC), in the United States, one in five women and one in seventy-one men will be raped at some point in their lives (NSVRC 2016, Basile et al. 2016). Even more disturbing, 43.9% of women will experience other forms of sexual assault besides rape at some point in their lives; for

instance 12.5% have experienced sexual coercion, 27.3% have experienced unwanted sexual contact, and 32.1% have experienced non-contact unwanted sexual experiences (Breiding at al. 2014). Since almost 50% of women will experience sexual assault in their lifetime, it is abundantly clear that sexual assault is a pervasive problem in society. Although sexual assault survivors may require medical care, the causes and effects of sexual assault extend well beyond the purview of what medicine can address.

In Part I Section A, I will argue that the use of memory dampening neurotechnological interventions as treatment for sexual assault survivors is consistent with the ethical obligations of healthcare providers as stated by their professional organizations. In Part I Section B, I will discuss how neuropsychiatrists can use memory dampening neurotechnology as treatment for psychiatric conditions tied to sexual assault. In Part II, I will argue that memory dampening neurotechnological interventions may generate unintended harms because it only provides subjective relief from the suffering tied to sexual assault. In Part II Section A, I will discuss how neuroscience misunderstands the causes of the harm of sexual assault as a medical problem requiring medical treatment, which is somewhat akin to the medical model of disability. Specifically, I will argue that memory dampening perpetuates a reductionist view of sexual assault that is harmful to sexual assault survivors as persons. In Part II Section B, I will discuss other harms of sexual assault that are rooted in the social environment including the stigmatization of sexual assault, moral injury, and relational harms such as negative impacts on the ability to create and maintain meaningful relationships. In Part II Section C, I will argue that sexual assault survivors construct their idea of who they are

through narration and are constituted as persons with equal moral value in the social environment. In Part III, I will present what I claim to be an appropriate and ethical response to sexual assault – healthcare providers must situate sexual assault survivors in their social contexts as persons whose identity is constitutive of autobiographical and biographical narratives.

Since healthcare professionals, such as neuropsychiatrists, are well within their ethical obligations as physicians to use memory dampening interventions as treatment for emotional dysregulation resulting from trauma-related stress tied to sexual assault, as I will argue in Part I Section A, and healthcare providers would likely disagree with my claim in Part II Section A, this project is primarily geared towards philosophers and ethicists, as well as sexual assault survivors and their advocates, in order to resist the epistemological understanding of the harms of sexual assault found in the medical context.

Section A

Healthcare providers are increasingly treating sexual assault survivors with memory dampening neurotechnology (Mahabir et al. 2016, Hanson and Adams 2016, Mahabir et al. 2015, Nader et al. 2013, Debiec et al. 2011, Maren 2011, Ravindran and Stein 2009, Brunet et al. 2008, Henry et al. 2007, Kobler 2010, Hayes et al. 1996) in an attempt to alleviate the suffering caused by sexual assault. Memory dampening refers to neurotechnological interventions that weaken "the emotionality of our reactions to arousing experiences. Drugs like propranolol may, in effect, dampen emotional, and perhaps even factual, aspects of memory" (Kobler 2010, 1567). Before discussing how

neuroscientists are using memory dampening neurotechnology as treatment for the emotional dysregulation resulting from trauma-related stress characterized as post-traumatic stress disorder (PTSD)[1], I will discuss how treating sexual assault survivors with memory dampening interventions is consistent with the ethical obligations of healthcare providers. Since personal family practitioners, psychologists, psychiatrists, and in the most severe of cases, neuropsychiatrists are the healthcare providers most likely to encounter survivors of sexual assault, I will limit my scope of ethical guidelines and principles to those professional organizational standards of care.[2]

The America Psychiatric Association (APA) largely follows the ethical obligations of the American Medical Association (AMA), but they have specified certain obligations that are especially applicable to psychiatry (APA 2013). The ethical obligations that are especially applicable to psychiatry generally revolve around differences in confidentiality agreements, the importance of patient-provider relationships in the delivery of care, and standards of professionalism and care. The American Neurological Association (ANA) is to neuroscience as the APA is the psychiatry; similar

[1] Although emotional reactions to traumatic events may vary (fear-based emotional, behavioral, re-experiencing), the essential feature of PTSD is the development of characteristic symptoms, as specified in the Diagnostic and Statistical Manual of Mental Disorders 5th Edition (DSM-5), following exposure to one or more traumatic events (DSM-5 2013, 274-275).

[2] In other words, family practitioners, psychologists, psychiatrists, and neuropsychiatrists are the healthcare providers with the ability to prescribe, and/or refer patients to providers who can prescribe medication, memory dampening technology to sexual assault survivors experiencing emotional dysregulation resulting from trauma-related stress characterized as post traumatic stress disorder. Granted, there is significant under-reporting issue in sexual assault cases that clearly affects the numbers of survivors seeking care for trauma-related stress and other health issues that are associated with sexual assault.

to the APA, the ethical obligations of the ANA also closely resemble the ethical obligations as stated by the AMA (Moses and Illes 2017).[3] According to the American Association of Neurology (AAN), the traditional goals of medicine include: "1) prevent and diagnose disease or injury; 2) cure or treat the disease/injury; 3) reduce suffering or, if that is not possible, help patients to cope with a disease or injury; 4) educate patients about disease/injury and prognosis; 5) help patients to die in peace and with dignity; 6) reassure the 'worried well' who do not have a disease/injury" (Larriviere et al. 2009, p.2).

Treating sexual assault survivors with memory dampening interventions, such as propranolol, to alleviate the suffering of sexual assault survivors seems consistent with their ethical obligations as physicians to promote beneficence, nonmaleficence, and other ethical principles such as fidelity and responsibility (APA 2016, APA 2013, Moses and Illes 2017, Larriviere et al. 2009). Based on the ethical obligations stated by the AMA, APA, ANA, and AAN, providing novel memory dampening neurotechnological interventions to sexual assault survivors experiencing emotional dysregulation resulting from trauma-related stress characterized as PTSD fits well within the ethical obligations of healthcare providers to reduce suffering and to diagnose and treat mental illnesses. Since alleviating the suffering tied to sexual assault is the primary therapeutic purpose of memory dampening neurotechnologies, healthcare providers are well within their ethical obligations as stated by their presiding professional organization.

[3] The American Neurology Association and the American Association for Neurology follow the same ethical guidelines. As such, I will use the ethical guidelines for the ANA and AAN interchangeably.

Section B

Neuroscientists can employ memory dampening technology that intervenes upon the memory consolidation process of sexual assault survivors experiencing trauma-related stress and emotional disregulation (Mahabir et al. 2016, Robillard and Illes 2016, Hanson and Adams 2016, Mahabir et al. 2015, Debiec et al. 2011, Maren 2011, Pitman et al. 2011, Cabrera 2011, Ravindran and Stein 2009, Brunet et al. 2008, Hayes et al. 1996). Neuropsychiatry is now responding to psychiatric 'diseases' through research on novel neurotechnological interventions such as: deep brain stimulation (DBS), transcranial direct current stimulation (tDCS), electroconvulsive therapy (ECT), neural interfaces such as brain computer interfaces (BCI), transcranial magnetic stimulation (TMS), as well as pharmaceutical interventions such as propranolol (Robillard and Illes 2016).[4] Memory dampening neurotechnologies such as propranolol are already offered in clinical-settings for therapeutic memory dampening intervention (Mahabir et al. 2016,

[4] These neurotechnologies can manipulate memory in a variety of ways. For example, Propranolol is a beta-blocker that disrupts the formation of the emotionally charged memories that typically occur after a traumatic event (Hurley 2010: 222, 227). Deep brain stimulation is an invasive procedure that aims to stimulate the amygdala in an effort to sort of recalibrate the brain's neural processes (Shapira et al. 2006). Repetitive transcranial magnetic stimulation aims to reduce hyperarousal symptoms such as paranoia, hypervigilance, etc. (Osuch et al. 2009). Transcranial direct current stimulation modulates cortical excitability and induces long-lasting effects (Mondino et al. 2014). Electroconvulsive therapy (ECT) is a non-pharmaceutical reconsolidation-based approach to memory manipulation that is an "experimental intervention designed to reactivate the neural mechanisms mediating traumatic memories in order to block its reconsolidation" (Nader et al. 2013, 478). ECT is only effective when the memories are reactivated, but not when memory activation is omitted, i.e., the patient cannot be under anesthesia (Nader et al. 2013). "Affective BCIs, which decode emotional experience from neural activity, are a candidate control signal for responsive stimulators targeting the limbic circuit. Present affective decoders, however, cannot yet distinguish pathologic from healthy emotional extremes" (Widge et al. 2014).

Nader et al. 2013, Ravindran and Stein 2009).[5] Other neurotechnologies such as DBS, TMS, ECT, and tDCS are still in the research phase of development. In the more distant future, BCIs may be used to download one's memories for future recollection and select other memories for erasure.[6] Some of these neurotechnological interventions are non-invasive, e.g., TMS, Propranolol, and reversible, e.g., DBS, ECT, while others are invasive, e.g., DBS, BCI, and nonreversible, e.g., tDCS (Elsey and Kindt 2016, Henry et al. 2007). All of these memory dampening neurotechnologies aim to intervene on the memory consolidation process, which is the prevailing neural understanding of memory.[7]

Consolidation is the memory process responsible for stabilizing a memory trace after the initial acquisition (Sekeres et al. 2017, Nader et al. 2013), e.g., the memory processes responsible for stabilizing the memory traces of sexual assault after the traumatic event. The neural understanding of memory provides the taxonomy of the psychological processes of memory and maps the taxonomy onto the particular functions of the memory process in the brain (Sekeres et al. 2017, Nader et al. 2013). For example,

---

[5] The United States Food and Drug Administration (FDA) has approved Inderal, a common brand name for propranolol, for: chronic angina pectoris (adults), cardiac dysrhythmia (adults), essential tremor (adults), hypertension (adults), idiopathic hypertrophic subaortic stenosis (adults), migraine (adults), pheochromocytoma (adults), postmyocardial infarction syndrome (adults) (Stanford Medicine, [http://whatmeds.stanford.edu/medications/propranolol.html]). But, propranolol has some off-label uses that it is sometimes prescribed to treat such as, phobias, aggressive behavior, tremors, schizophrenia, withdrawal from narcotics, side effects of antipsychotic drugs, and bipolar disorder (Ibid. Wyeth Pharmaceuticals [https://www.accessdata.fda.gov/drugsatfda_docs/label/2011/016418s080,016762s017,017683s008lbl.pdf]).

[6] 'The more distant future' I am referring to here is around 2045.

[7] Memory manipulating interventions are either consolidation-based or reconsolidation-based, which have different ethical and social implications that I will discuss further in Part II.

if the experience of sexual assault is going to be stored as a long-term memory, then it "must form a physical 'memory trace' in the brain" (Ibid. 19-20). The neural understanding of memory suggests that (a) a combination of episodic and sematic memory is involved in the neuropsychological process of memories of sexual assault, and (b) memory consolidation, the function of the brain responsible for stabilizing memories for future retrieval, occurs on both the synaptic and systematic levels of the memory process in the brain (Ibid.). [8] In essence, the neural understanding of memory explains how autobiographical memory, i.e., episodic memory, and fact-based memory, i.e., semantic memory, gets consolidated and where the neural processes involved in consolidating autobiographical memory are located in the brain.[9]

There are three theories that developed into the prevailing understanding of memory in neuroscience today: the Standard Consolidation Theory (SCT), Multiple Trace Theory (MTT), and Trace Transformational Theory (TTT). According to the SCT, the hippocampus plays a time sensitive role in the declarative memory consolidation

[8] Consolidation on the synaptic level involves the modification of neural networks in the hippocampus (Sekeres et al. 2017). Consolidation on the systematic level involves the transfer and distribution of memory traces outside of the hippocampus into the cortex (Ibid.).

[9] "Autobiographical memory is defined here as an explicit memory of an event that occurred in a specific time and place in one's personal past (a detailed discussion of the definition follows). The components that contribute to the emergence of autobiographical memory include basic memory systems, the acquisition of complex spoken or signed language, narrative comprehension and production, memory talk with parents and others, style of parent talk, temporal understanding, representation of self, person perspective, and psychological understanding (i.e., theory of mind)" (Nelson and Fivush 2004, 486). Episodic memory, i.e., autobiographical memory "for a unique event occurring within a precise spatio-temporal context", and semantic memory, i.e., "fact-based information related to an event, but lacking contextual details", are declarative memories that can be consciously and explicitly recalled (Sekeres et al. 2017, 23).

process and, over time, memory forms new traces in the cortex (Ibid.). However, SCT treats both episodic and sematic memories as equivalent (Ibid.). Treating autobiographical memory and fact-based information related to an event as equivalent conflates the role each plays in remembering.[10] Thus, the MTT was proposed to account for the shortcomings of SCT, which was developed into the TTT (Nadel and Moscovitch 1997, Moscovitch 2007).[11] Moreover, it was found that pharmacological inactivation of the anterior cingulate cortex in the prefrontal cortex and the hippocampus disrupted retrieval of contextual and perceptual memory involved in episodic, autobiographical memory (Sekeres et al. 2017). In the case of using memory dampening for sexual assault survivors, if the hippocampus continues to play an integral role in the consolidation and retrieval of autobiographical memories, as TTT suggests, and pharmacological inactivation in the anterior cingulate cortex and the hippocampus disrupts remembering

[10] For example, studies on lesions of human medial temporal lobe found that preserved remote memories were qualitatively different from similarly aged memories in patients with intact hippocampi, and were more semantic in nature, lacking perceptual, temporal, and contextual details (Fujii et al. 2000, Rosenbaum et al. 2005, Rosenbaum et al. 2005, Sekeres et al. 2017). "This suggests that the hippocampus is not required for the storage an retrieval of semantic memories" (Sekeres et al. 2017, 23). Meaning, SCT does not explain the qualitative difference between preserved remote semantic memory and temporally-extensive amnesia for episodic memory.

[11] Based on SCT the autobiographical and fact-based memories of sexual assault are treated as one and the same. Meaning that if memory dampening affects episodic memory, then semantic memory may be affected as well. "MTT holds that cortical memory traces are extractions of common elements, from repeated activations over time, which become integrated into existing schematic knowledge networks. These details continue to depend on the hippocampus for their storage and retrieval….[TTT holds that] as schematic memories lack may of the unique contextual and perceptual details of the original experience, they maybe recovered without the hippocampus. Once memory traces make it to the cortex, the memory can no longer return to its hippocampal state" (Sekeres et al. 2017, 23-24).

certain autobiographical memories, then it seems that memory dampening interventions that target the prefrontal cortex and hippocampus reduce the ability for autobiographical memory recall in the remembering of contextual and perceptual elements of the memory of sexual assault. Unfortunately, SCT, MTT, and TTT all individualize the trauma of sexual assault by reducing the suffering felt by sexual assault survivors to neurobiological mechanisms that can be intervened on by memory dampeners such as propranolol.

The aim of memory dampening as treatment for the harms of sexual assault, i.e., the emotional dysregulation associated with trauma-related stress characterized as PTSD, is to inhibit the reconsolidation of certain aspects of episodic memory in an attempt to alleviate the suffering tied to sexual assault.[12] Propranolol, a beta-adrenergic blocker, reduces physiological responses during the memory consolidation process by limiting the activations of norepinephrine neurotransmitters (Brunet et al. 2008). Propranolol can be used as a memory dampening intervention in two ways, prophylactic propranolol is a consolidation-based memory dampening neurotechnological intervention and therapeutic propranolol is a reconsolidation-based memory dampener. The difference between the two ways of using propranolol as a memory dampening neurotechnological intervention is the difference between prevention and therapy. For the purposes of this discussion, I will primarily limit my scope of memory dampening neurotechnologies to therapeutic

[12] For example, propranolol can be used as a pharmacological fear and reconsolidation-based memory dampener that is most effective in intervening upon the reconsolidation of certain aspects of episodic memories such as fear.

propranolol, a reconsolidation-based memory dampener.[13] Unlike consolidation-based prophylactic propranolol[14], the reconsolidation-based approach to memory manipulation is employed after the development of PTSD as therapeutic intervention on traumatic memories.

Steenen et al. conducted the first systematic review and meta-analysis of the effects of propranolol as treatment for anxiety disorders (Steenen at al. 2016).[15] Only eight studies met Steenen et al.'s criteria for review, and only one of those eight studies (Brunet et al. 2008) involved the use of propranolol as treatment for PTSD. Although

[13] This choice is based on the fact sexual assault survivors are rarely in a situation where they can benefit from prophylactic propranolol, considering consolidation-based interventions have around a 12-hour pre and post traumatic event timeframe in which prophylactic propranolol would prevent consolidation of the traumatic memory (Nader et al. 2013). Thus, it seems reasonable to focus my attention on reconsolidation-based memory manipulation interventions.

[14] At present, there is little evidence to support prophylactic propranolol is effective or to support the claim that there are minimal risks. Prophylactic propranolol is used prior to, or directly after, a traumatic event in order to prevent the emotions from being consolidated with the informational content of the memory. One potential issue with the consolidation-based approach is that the brain engages in consolidation mechanisms only during the initial memory storage, i.e., a sexual assault survivor would have to have access to consolidation-based memory manipulation interventions within six hours post sexual assault. Not only is this a highly unlikely scenario considering the current stigma surrounding sexual assault, but questions surrounding competency to make an informed decision about whether or not to participate in consolidation-based memory manipulation could arise. Moreover, consolidation-based memory manipulation does not have the ability to be memory specific because any new memories created during the consolidation process are susceptible to memory manipulation.

[15] Interestingly, PTSD is not categorized as an anxiety disorder in the Diagnostic and Statistical Manual of Mental Disorders 5th Edition (DSM-5), and is now included in Trauma-and Stressor-related Disorders (DSM-5 2013, 271). Granted, anxiety and trauma-related stress share certain features such as the emotional response to real or perceived threats, e.g., fear, and the anxiety expressed in anticipation of future threats (DSM-5 2013, 189).

propranolol has been researched for both prophylactic and therapeutic memory dampening interventions, therapeutic propranolol has distinct implications from prophylactic propranolol.[16] Therapeutic propranolol also intervenes on the consolidation process of memory, but requires another step – the traumatic memory tied to the manifestation of psychiatric conditions like PTSD must be recalled in order for the once-consolidated traumatic memory to enter into an unstable state. However, Steenen at al. claims that, "no evidence was found for effects of propranolol on PTSD symptom severity through inhibition of memory reconsolidation. In conclusion, the quality of evidence for the efficacy of propranolol at present is insufficient to support the routine use of propranolol in the treatment of anxiety disorders"(Steenen et al. 2016, 128).[17] One potential issue with the reconsolidation-based approach is that the memory must be reactivated in order to inhibit the full reconsolidation of a traumatic memory. Once the traumatic memory is brought back into an unstable state, therapeutic propranolol is able

[16] Prophylactic propranolol is one kind of consolidation-based memory dampening neurotechnological intervention that aims to prevent the development of PTSD by intervening upon the initial consolidation process of the memory of sexual assault, which can be achieved up to six hours prior to and six hours after the traumatic event (Nader et al. 2013). Reconsolidation-based memory dampening neurotechnological interventions are administered after the onset of PTSD symptoms, which means that the traumatic memory has already been consolidated and will be brought back to an unstable state in order to intervene on the consolidation process. Note: both consolidation-based and reconsolidation-based neurobiological interventions on traumatic memories may include either pharmacological or neurotechnological interventions, such as propranolol (both therapeutic and prophylactic).

[17] "Only one trial with chronic PTSD patients showed that 40mg of short-acting oral propranolol given prior to imagery exposure, followed by 60 mg of long-acting oral propranolol, statistically reduced physiological responding (reduced heart rate and skin conductance) during imagery exposure 1 week later (F (3,15) = 5.1; p = 0.007, n^2 = 0.49) (Brunet et al., 2008). No data on PTSD symptom severity endpoints were provided in the study report" (Steenen et al. 2016, 135).

to prevent the reconsolidation of the negative emotions, such as fear, with the rest of content of the traumatic memory. Since therapeutic propranolol aims to inhibit the reconsolidation of the fear-memory associated with a traumatic event such as sexual assault, it is important to discern whether inhibiting the reconsolidation of the fear tied to the memory of sexual assault is separate from the reconsolidation of the declarative, i.e., autobiographical and fact-based memory, of sexual assault. Steenen at al. note that a recent meta-analysis of eight experiments supports the notion that propranolol administered before memory retrieval is "capable of reducing the expressions of cue-elicited fear responses (Lonergan et al. 2013)" (Steenen et al 2016, 129).[18]

However, reactivating the traumatic memory and intervening upon its reconsolidation via propranolol may drive autobiographical impairment and eventual loss of an autobiographical narrative upon remembering the trauma of sexual assault over time (Singer et al. 2004). "At the behavioral level, there is overwhelming evidence that emotionally-charged events often lead to the creation of vivid long-lasting memories (Cahill and McGaugh 1998, McGaugh 2004), in part due to a surge of norepinephrine and subsequent stimulation of adrenergic receptors in the nervous system (Crow 1968,

[18] In regards to sexual assault, it seems that cue-elicited fear responses can be random associations, e.g., 'there was a red lamp on the desk when I was assaulted, and now I can't see a red lamp without fear and anxiety,' as well as fear responses that are broadly associated with the event of sexual assault, e.g., 'I was walking to my car when someone came up behind me and assaulted me in the parking garage, now anytime a man walks behind me, I get rape anxiety'. Would propranolol reduce the expressions of cue-elicited fear responses in both cases? Unfortunately, further consideration of this point, is beyond the scope of my current discussion.

Izquierdo and Medina 1997), and, as a result, improved memory consolidation (McGaugh 2004)" (Tully and Bolshakov 2010).

The relationship between propranolol and memory centers on how fear is involved in the memory consolidation process (Brunet et al. 2008, Tully and Bolshakov 2010, Henry et al. 2007, Nader et al. 2013).[19] Strong emotions directly affect the strength of autobiographical, i.e., episodic, memories that aid in the constriction of the self-narratives we tell ourselves about who we are as persons – the stronger the emotions like fear, and the more norepinephrine subsequently released, the stronger the memory (Henry et al. 2007, Singer et al. 2013). If propranolol's memory dampening affects intervene on the reconsolidation memory process by blocking norepinephrine neurotransmitters (Brunet et al. 2008), and the strong emotions tied to a traumatic memory are part of episodic memory (Nader et al. 2013), then reconsolidation-based memory dampening intervention may drive autobiographical impairment because strong emotions like fear may not be reconsolidated with the rest of the declarative memory, the autobiographical and fact-based memory, of sexual assault (Ibid).[20]

---

[19] To be sure, memory is complex and the relationship between memory and propranolol depends on the theory of memory that neuroscience employs. However, it is not possible for me to fully lay out varying accounts of memory in this project. See (Kahana 2017, Kim et al. 2016, Manning et al. 2015, Nazarov et al. 2014, Rosenbaum 2005, De Brigarde 2014).

[20] Therapeutic propranolol used to treat trauma-related stress may also "reduce socially-valuable information that may be vitally important to prosecuting and protecting others from harm" (Kobler 2010, 1560) by dampening the associated emotional coloring of the memory of sexual assault. Note: I am not suggesting that the fact-based information of the memory of sexual assault will be dampened. Rather, I am suggesting that the emotional coloring of the fact-based information of the memory of sexual assault is the socially valuable information.

Reconsolidation-based memory manipulation approaches target the amygdala, and other brain regions including the hippocampus and inner cortex, using novel neurobiological technologies such as propranolol and then the patient is reminded of their trauma in order to bring well-consolidated fear memories back into an unstable state (Ibid. 477; Agren et al. 2017).[21] However, understanding memory as a number of function systems in the brain for retaining, recalling, and storing experiences that can be intervened upon through novel memory manipulating technology seems to reduce the role of memory to storage and retrieval of information in our minds (Cabrera 2011).[22] I argue that the neural understanding of memory as a consolidation process in the brain perpetuates a reductionist view of sexual assault survivors. Memory dampening interventions, such as propranolol, aim to intervene upon the consolidation memory process in order to affect the emotional coloring of the memory of sexual assault, not the content of the memory. Nader et al. claims that, "in the ideal case, altering the impact of the traumatic memory by reconsolidation blockade would result in restoring a patient's quality of life. However, other affective and social cognitive disturbances can remain, even after successful treatment of core PTSD symptoms" (Nader et al. 2013, 481). In Part

[21] Recent studies on the mechanisms responsible for forming memory traces characterize cyclic-AMP response-element binding protein (CREB) as an essential memory gene in hippocampus-dependent memory consolidation (Bourtchuladze et al. 1994) and other brain regions including the amygdala (Josselyn et al. 2001), insular cortex (Sano et al. 2014), and retrosplenial cortex (Czajkowski et al. 2014, Sekeres et al. 2017). Inhibiting the CREB protein impedes the memory consolidation process.

[22] Of course, such storage and retrieval systems are present and functioning in memory and remembering; however, my concern is not with the neurobiological mechanisms of the memory consolidation process, but with the tendency for healthcare providers to view memory only in its mechanistic terms.

II Section A, I will direct my focus to one harmful ethical implication of memory dampening neurotechnological interventions that I believe deserves special attention; specifically, I will argue that memory dampening interventions may undermine healthcare providers' attempts to alleviate the suffering tied to sexual assault over time by perpetuating a distorted and reductionist view of the problem of sexual assault.

PART II: HARMS OF MEMORY DAMPENING FOR SEXUAL ASSAULT

In many ways, memory manipulating interventions are nothing new; human beings have attempted to manipulate memory through techniques as basic as practice to as novel as memory dampening. "Human memories, inexact and labile to begin with, have long been the target of intervention, from cognitive-behavioral therapy to electroshock to medication. Treating conditions like depression at the engram level 'is continuous with what we are already doing'" (Noonan 2014). Patricia Churchland, author of *Touching a Nerve: The Self as Brain*, is skeptical that memory manipulation will have a profound effect on the medical treatment of neurological diseases, PTSD, and other psychological diseases, such as depression (Churchland 2013). However, even if new memory manipulating technologies are consistent with standard therapies for PTSD, it does not necessarily follow that we ought to employ these novel methods of PTSD treatment without seriously considering the ethical and social implications of doing so.

Alleviating the suffering tied to sexual assault using reconsolidation-based memory dampening technology may generate harmful ethical implications; unfortunately, healthcare providers may be increasingly tempted to view sexual assault survivors through the lens of the medical model in a similar way as they have with

disability.[23] Specifically, in Section A, I will argue treating sexual assault survivors with memory dampening may undermine healthcare providers' attempts to alleviate the suffering tied to sexual assault over time by perpetuating a distorted and reductionist view of the problem of sexual assault. Traditional epistemological approaches to treating the psychological and emotional suffering tied to sexual assault, e.g., the medicalization of sexual assault that leads to a reductionist view of survivors, have implications for how the harms of sexual assault are understood.[24] Most of the current literature surrounding memory manipulation as treatment for trauma-related stress is firmly situated within the medical model of care.[25] However, this should not be interpreted as suggesting that sexual assault ought to be seen through the lens of disability; rather, I am suggesting that the social model of disability provides a useful way to understand the social response to sexual assault.[26] In Section B, I will discuss how the problem of sexual assault is rooted

[23] The tension between the medical and social models of disability sheds light on healthcare professionals' increasing tendency to treat sexual assault survivors with memory dampening neurotechnology by highlighting the disparity between the medical and social models' understanding of the cause of the problem of sexual assault. See (Cohon 2004).

[24] I am not suggesting that the medical model and social model are mutually exclusive. Rather, I am suggesting that the prevailing clinical norms favor the medical model in lieu of the social model because it identifies the neurological and biological mechanisms of psychiatric conditions that can be intervened upon using novel memory dampening neurotechnological interventions.

[25] Since my aim is to resist the current tendency to medicalize trauma-related stress resulting from sexual assault, I will extrapolate from literature that is not specifically centered on sexual assault. This is due to a lack of literature that specifically deals with threats to the healthcare provider-patient relationship and the social responsibility of healthcare professionals in responding to individuals suffering from trauma-related stress.

[26] The social model of sexual assault sees sexual assault as resulting from social causes such as the warped conception of masculinity that runs throughout society, the

in the social environment because sexual assault impact survivors in a variety of ways that are best understood in a social context. The harms tied sexual assault include, but are not limited to: perpetuating a distorted understanding of sexual assault that reduces the causes of the harms of sexual assault to psychiatric conditions such as emotional dysregulation characterized as PTSD, stigmatization, moral injury, and relational harms such as, social adjustment and difficulties maintaining meaningful relationships with others in the social environment. In other words, the reductionist view of sexual assault is perpetuated by therapeutic memory dampening because it merely provides relief from the harms of sexual assault from the first-person point of view, and fails to encompass the relational harms of sexual assault from the third-person point of view. In Section C, I will argue that in a social context, sexual assault survivors construct their idea of who they are through narration.

Section A – Medicalization & the Reductionist View of Sexual Assault

Yet, the underlying framework that informs the neural account of memory, in which consolidation-based and reconsolidation-based memory manipulating neurotechnology is situated within, may perpetuate a distorted and reductionist view of

---

objectification of women, expectations about what constitutes the normal range of human experiences and responses to trauma, and the stigma experienced by those who are sexually assaulted – all of which emerge from traditional gender norms in the social environment. In this way, the medical model approach to the problem of sexual assault redefines what is considered a normal and appropriate response to the trauma of sexual assault according to its effect on individual pathology. I will delve into this point deeper in Part II Section A-B.

sexual assault.[27]Alleviating the emotional dysregulation resulting from the trauma-related stress associated with sexual assault via consolidation-based and/or reconsolidation-based memory dampening interventions fits well within the current understanding of the medical model of disability (Cohon 2004, 660). "The medical model of disability locates the cause of disability in the physical state of the disabled person and tends to portray an inherent connection between a physical and mental impairment and consequent disadvantage" (Schick et al. 2014, 868). On the other hand, the social model of disability understands disability as the "disadvantage or restriction of activity caused by a contemporary social organization which takes no or little account of people who have physical impairments and thus excludes them from participant in the mainstream of social activities" (Goering 2015, Oliver 1996).[28]

In my view, Patricia Churchland's book, *Touching a Nerve: Our Brains, Our Selves*, exemplifies the tension between the medical and social models of care. The 'mechanism' view correlates with the medical model of care, which includes the neural understanding of memory, while the 'magic' view correlates with the social model of

[27] This should not be taken to mean that I am suggesting denial of the neurological and biological factors and processes in the brain that underlies the psychophysiological manifestation of harms tied to sexual assault. Rather, I am calling attention to the idea that solely understanding the harms of sexual assault in terms of the neurological and biological factors and processes in the brain as manifested in psychiatric conditions tied sexual assault prevails in the current understandings of memory in neuropsychiatry.

[28] It must also be noted that Goering is referencing a physical impairment, not a psychological impairment in regards to the social model of disability. However, psychological impairment related to PTSD as a result of sexual assault is stigmatized is a similar way, which results in the excluding sexual assault survivors from participating in mainstream social activities.

care.[29] In this way, the medical model of sexual assault can be understood as locating the cause of trauma-related stress resulting from sexual assault in individual pathology. This tends to portray an inherent connection between individual pathology and trauma-related stress and consequent therapeutic potential of novel neurobiological technologies.[30] If the aim of memory dampening is to intervene upon individual pathology during the memory consolidation process, and the social causes and harms of sexual assault are not addressed by intervening upon the reconsolidation of certain aspects of episodic memory like fear, then the use of memory dampening as treatment for psychiatric conditions tied to sexual assault falls under the medical model of care.

The underlying framework that informs the neural account of memory, in which consolidation-based and reconsolidation-based memory manipulating neurotechnology is situated within, may perpetuate a distorted and reductionist view of sexual assault.[31] The reductionist view of sexual assault perpetuated by the use of therapeutic memory

---

[29] The 'mechanism' refers to the neurobiological cause of the psychiatric conditions tied to sexual assault. The 'magic' refers to the social impact of sexual assault, which is just as important as the underlying neurological and biological mechanisms of trauma-related stress. Granted, Churchland would likely agree that the social determinants of psychiatric conditions (e.g., traditional gender norms that underlie the stigmatization of sexual assault, the prevalence of sexual assault, etc.) related to sexual assault are important for *explaining* those conditions.

[30] Note: a mechanistic view of psychiatric conditions related to sexual assault is not, in principle, incompatible with the view I'm advancing. Rather, the mechanistic view only becomes problematic when it's privileged over attending to the survivor's social context.

[31] This should not be taken to mean that I am suggesting denial of the neurological and biological factors and processes in the brain that underlies the psychophysiological manifestation of harms tied to sexual assault. Rather, I am calling attention to the idea that solely understanding the harms of sexual assault in terms of the neurological and biological factors and processes in the brain as manifested in psychiatric conditions tied sexual assault prevails in the current understandings of memory in neuropsychiatry.

dampening interventions on the psychiatric conditions tied to sexual assault devalues the social harms of reduced trust in others manifested in the deterioration of intimate relationships, social adjustment, and stigmatization. In other words, if the neurobiological mechanisms of psychiatric conditions are understood as the 'cause' of the harm of sexual assault, then social determinants of health only *explain* the 'causes' rather than being understood *as* the causes of the of mechanisms behind psychiatric conditions tied to sexual assault, i.e., the neural understanding of memory does not understand the social determinants of health are relational harms equally deserving of being addressed. If this is the case, and social determinants of health are only understood as explaining the development of PTSD after sexual assault not the harm of sexual assault itself, then memory dampening may not actually alleviate the suffering associated with sexual assault, but could possibly exacerbated it.

Even though the neuroscience is only a further articulation of the prevailing medical/clinical understanding of the problem of sexual assault, neuroscience has helped determine the current understanding of the problem of sexual assault. The misunderstanding of the problem of sexual assault in neuroscience is rooted in the current neural understanding of memory consolidation discussed in Part I Section B, which I argue contributes to the medicalization of traumatic experiences of sexual assault and perpetuates a reductionist view of sexual assault.[32] Medicalization can be understood as

[32] Understanding memory as a process of consolidation replaced the traditional understanding of memory in neuroscience that proposed memory traces are imprinted in its original form in the brain (Sekeres et al. 2017). Based on the neural understanding of memory, consolidation-based and reconsolidation-based memory manipulating

the reduction of social determinants of health to their neurological and biological manifestations (Schick et al. 2014, Clarke et al. 2003); however, not all responses to sexual assault can be so easily reduced to individual pathology. Granted, this definition of medicalization does not exclude the possibility of acknowledging that there are some elements of the harm of sexual assault that are medical in nature while also acknowledging that the problem of sexual assault is rooted in the social environment. Survivors of sexual assault may incur both physical and psychological injuries, including, but not limited to: bruising, genital trauma, and psychiatric conditions such as emotional dysregulation characterized as PTSD (Basile and Smith 2011). Simply acknowledging that some harms of sexual assault are social determinants of health does not necessarily imply that the social harms of sexual assault are understood as equally valuable and deserving of care. I argue that the medicalization of sexual assault tends to devalue the social aspects of sexual assault in favor of evidenced-based medical interventions over social methods of interventions, which may be yet another harm of sexual assault.

Unfortunately, the neural understanding of memory does not avoid the harmful implication that reconsolidation-based memory dampening neurotechnological interventions may undermine healthcare providers' attempt to alleviate the suffering tied to sexual assault by perpetuating a distorted view of sexual assault that reduces the problem to neurobiological factors and processes in the brain. In this way, the neural understanding of memory medicalizes sexual assault by perpetuating a reductionist

---

neurotechnologies aim to reduce the impact of fear in the consolidation of fear memories as well as associated emotional dysregulation resulting from trauma-related stress.

approach to treating sexual assault survivors with memory dampening as treatment for the suffering tied to sexual assault. Some healthcare providers and neuroscientists see the problem of sexual assault through the medical model lens in which the presence of emotional dysregulation in individual pathology is determined as the 'cause' of the problem. However, reducing the problem of sexual assault to neurobiological mechanisms that can be manipulated via pharmaceutical or other neurobiotechnological interventions merely provides subjective relief from the traumatic memories of sexual assault and fails to address the harms of sexual assault that impact survivors in a social environment.[33]

I argue that medicalization of the trauma of sexual assault fails to take into account that, (1) the nature of the harms of sexual assault are not only medical, but are constituted in the social environment, and (2) the nature of sexual assault survivors as patients is social and health care professionals ought to understand their patients according to a narrative-based conception of the self.[34] Thus, although healthcare providers attempt to alleviate the suffering tied to sexual assault using memory dampening neurotechnological interventions, the psychological and emotional suffering tied to sexual assault is not limited to what can be treated medically. In Part II Section B, I will argue that the individualistic orientation of using memory dampening interventions as treatment for psychiatric conditions resulting from sexual assault are laden with social biases, which relationally harms sexual assault survivors.

[33] By 'subjective relief', I mean relief from the first-person perspective.
[34] See Part II Section C.

Section B – Social Roots: The Harm of Sexual Assault

The problem of sexual assault is rooted in the social environment because sexual assault harms survivors in a variety of ways that are best understood in a social context.[35] Sexual assault harms survivors in variety of ways including, but not limited to, the medicalization of sexual assault, stigmatization, moral injury, as well as relational harms such as negative impacts on relationships the ability to relate to others in the social environment. Although rape is but one type of sexual assault, Sarah Clark Miller's article titled, "Moral Injury and Relational Harm," sheds light on the social nature of sexual violence against women. According to Miller, a relational harm can take on three principal forms: (1) the meaning of the harm is often relationally constituted, (2) harms that others inflict on us as individuals can negatively affect our relationships, and (3) harm an individual initially sustains that then reverberates throughout their community (Miller 2009, 513). Based on Miller's discussion, I see no reason to think that these three principal forms of relational harm are mutually exclusive. Therefore, it seems reasonable to assume that the harms tied to sexual assault can take on multiple forms of relational harm.

For instance, relational harm (1) refers to how the harm of sexual assault is constituted in the social environment – meaning, the harm of sexual assault can be increased or diminished depending on how their family, friends, coworkers, religious

[35] Interestingly, although social adjustment is typically considered a short-term impact after sexual assault, if a sexual assault survivor has a poor disclosure experience, then the survivor is at an increased risk of maladaptive behaviors, e.g., risky sexual behavior, substance abuse, etc., and trauma-related stress that can have significant long-term impacts on the sexual assault survivor (Basile and Smith 2011, 411).

community, healthcare providers, etc., respond to the survivor's sexual assault (Miller 2009). Relational harm (2) explicitly refers to how the harm of sexual assault that is inflicted on individuals can negatively affect the survivor's relationships, e.g., survivors may struggle to develop trust in their partners (Ibid). Relational harm (3) refers to how the harm of sexual assault transcends the individual survivor and reverberates throughout their social community, e.g., survivors may have trouble relating to others due to the stigmatization of sexual assault (Ibid). I argue that relational harm is the best way to understand the harms of sexual assault because it understands the harms of sexual assault in the social context.[36] Moreover, relational harm is not distinct from the three ways of understanding the harms of sexual assault I will discuss in this section. Rather, relational harm provides the epistemological framework for understanding how the harms of sexual assault may reverberate throughout the survivor's social community. In this section, I will discuss three accounts of the relational harms of sexual assault: the pluralist account of harm to agency and welfare, harm to dignity, and my account of the harm caused by sexual assault that views the pluralist account and the account of dignity through the lens of moral injury.

Pluralist Account of the Harm of Sexual Assault

The stigma that surrounds sexual assault emerges in a social context around gender norms. Miller references Ann Cahill's book, *Rethinking Rape*, for its discussion on the harms of rape, which Cahill contributes to "the historical oppression of women, the particular constructions of feminine sexuality, the imposition of a compulsory

[36] More on this is Part II Section C.

heterosexuality, the inherent contradiction between the ostensibly grave manner in which rape is considered ethical and the sheer prevalence with which it occurs" (Miller 2009, 508; Cahill 2001, 167). In this way, the stigmatization of sexual assault and sexual assault survivors is rooted in antiquated valuation of the moral worth of women as expressed in traditional gender norms. The connection between gender norms and the stigmatization of sexual assault relies on the conceptualization of the harm of sexual assault as harm to both agency and well-being. Miller claims there are two primary conceptualizations of harm: (a) the Kantian account of harm that focuses on agency and autonomy, and (b) the interest-based Utilitarian account of harm that focuses on serious reduction of welfare (Miller 2009, 508-509). For instance, survivors may experience guilt and shame resulting from how they feel and identify themselves after being sexually assaulted, and their beliefs about how others perceive them after their sexual assault, which harms both the survivor's agency, i.e., Kantian account of harm, and wellbeing, i.e., the interest-based Utilitarian account of harm.[37]

The pluralist account of harm claims that harms to both agency and wellbeing are necessary for a full account of the harm of sexual assault (Miller 2009). Following the pluralist approach to the conceptualization of the harms of sexual assault, harms to agency and autonomy are inseparable from the physical, psychological, emotional, and social harms of sexual assault that result in serious degradation of welfare. Thus, "any

[37] Survivors of sexual assault may also experience physical violence, e.g., bruises, genital trauma, and side effects from drugs used to carry out the act, and/or psychological violence that manifests in emotional dysregulation resulting from trauma-related stress, both of which negatively impact the well-being of sexual assault survivors.

adequate account of the harm of rape [and sexual assault more broadly]…will comment on wrongful harm to persons as agents as well as interest-holders" (Ibid. 509)[38]. In the case of sexual assault, survivors clearly experience wrongful harm to their selves as agents because sexual assault involves "any type of sexual contact or behavior that occurs without the explicit consent of the recipient" (U.S. DoJ Office on Violence Against Women).

If agency involves our ability to fully exercise our autonomy, and sexual assault occurs without the explicit consent of the recipient by definition, then sexual assault harms the agency of survivor's by undermining their ability to exercise their autonomy and agency as interest-holders with equal moral value. Moreover, the interest-holder is not limited to the survivor herself; rather, the survivor's family, friends, coworkers, religious community, and healthcare providers are all interest-holders in the physical, psychological, and emotional harms of sexual assault. The interest-holders harmed by sexual assault constitute the social environment of the sexual assault survivor. In this way, sexual assault is social in nature precisely because the harms of sexual assault are not limited to the survivor, but transcends the individual by encompassing the social community of the survivor as a whole, i.e., Miller's third form of relational harm.

Harm to the Dignity of Sexual Assault Survivors

However, as Miller claims, even the pluralist approach to the harm of sexual assault fails to emphasize how sexual assault endangers human dignity by perpetuating a

[38] For the purposes of my discussion, I will replace Miller's term 'rape' with 'sexual assault' for the remainder of this discussion.

reductionist approach to sexual assault that devalues the moral worth of survivors (Miller 2009). Miller claims that understanding the harm of sexual assault hinges on "tracking the interaction of harm, wrongness, and dignity…and adequate representation of the violation of the survivor's dignity that sexual assault inflicts cannot emerge apart from exploration of this vital component of sexual assault's harms" (Ibid. 510). Miller's argument relies on the claim that the damage to dignity caused by sexual assault exceeds the pluralistic confines that imposes a limitation on the harms of sexual assault to agency, autonomy, and interests. "Damage to dignity cannot be reduced to a single harm that agents can suffer…[because] while sexual assault does undermine self-determination (i.e., agency and autonomy), its damage cuts deeper, jeopardizing a person's equal moral value " (Ibid. 510).

In Miller's most recent article titled, "Reconsidering Dignity Relationally", she explores the concept of dignity in a less individualistic and more relational fashion by distinguishing between performative and status dignity (Miller 2017, 111).[39] *Performative* dignity can be "acknowledged through how others treat us morally and also through how we treat ourselves" and *status* dignity is unearned, intrinsic moral worth (Miller 2017, 112). Miller's point here brings my earlier claim that the stigma surrounding sexual assault emerges in a social context around gender norms full circle. Historically, women have had to fight to prove their equal moral worth in society; but, it wasn't until women established their equal moral worth in society that sexual violence against women was

[39] Note: Miller employs a deontological approach to care ethics, in which Kantian ethics and care ethics work together to map the interaction between ethics as caring and ethics as dignity (Miller 2017, 111).

thought to be wrong (Hampton 1999). The status dignity of men has historically been higher than the status dignity of women because more unearned intrinsic moral worth has been assigned to men than women.[40] Moreover, performative dignity is diminished when such assumptions are made and affects how sexual assault survivors understand their selves.[41] In this way, Miller presents dignity not as an attitude or disposition, but as a property a person has (Miller 2017); which suggests that dignity can be damaged by how others treat us and how we treat our selves, i.e., Miller's second form of relational harm.[42]

Moral Injury → (Pluralist Account of Harm + Harm to Dignity)

A more accurate account of the harms of sexual assault is to view the pluralist account and the harm to dignity through the lens of moral injury because it accounts for

---

[40] Since I am focused on women as survivors of sexual assault, it seems reasonable to limit my investigation into the struggle to establish women as equal in moral worth in cases of sexual assault. For example, assuming a female survivor of sexual assault was 'asking for it' by wearing a midriff top assigns the survivor less status dignity. The struggle women face in establishing their equal moral worth as persons is evidenced in the three decade long struggle to include sexual assault in criminal proceedings. In the U.S., *The Violence Against Women Act* (VAWA), which includes sexual assault as a crime, was not enacted until 1994 (Sacco 2015). However, it must be granted that the struggle women has faced historically to establish their equal moral worth as person is not limited to modern or contemporary times. The three decade long struggle I am referring to here is limited to the grassroot-based movement that spurred from the rising violent crime rate and focus on women as the victims of crimes that began in the 1960s. See (Sacco 2015) for a full overview of the journey to the enactment of the VAWA.

[41] I will delve into a discussion about how sexual assault survivors construct their ideas of who they are in the social environment more in Part II Section C.

[42] Miller argues against the notion that recognition (performative dignity) and appraisal (status dignity) respect are two sub-categories of respect as an attitude or disposition that a moral agent holds towards others. Rather, Miller argues that, "status dignity, as essentially inherent moral worth, is that which one recognizes through recognition respect…Performative dignity as it functions in conjunction with care is not a matter of judgment of someone's character" (Miller 2017, 112).

all three harms of sexual assault.[43] Miller moves beyond understanding rape as a violation of an individual's interests and agential abilities by arguing that, "rape, as a moral injury, negatively affects the very human dignity of victims" (Miller 2009, 505). Based on Miller's argument, the harm sexual assault causes to the survivor's dignity is best understood as a moral injury to their equal moral worth as persons (Miller 2017, Hampton 1999). Moral injury has been defined in various contexts, e.g., clinical, social sciences, feminist philosophy, and military ethics (Nazarov et al. 2015, Miller 2009, Hampton 1999, Sherman 2015). But, I will follow a combination of Jean Hampton and Nancy Sherman's definitions because they clearly express the social context of moral injury. Hampton defines moral injury as,

> "damage to the realization, or, acknowledgement of the victim's value, accomplished through behavior whose meaning is such that the victim is diminished in value…and actions that inflict moral injury violate moral standards in a particular way insofar as they are an affront to the victim's value or dignity" (Hampton 1999, 123-125).

Nancy Sherman defines moral injury as,

> "experiences of serious inner conflict arising from what one takes to be grievous moral transgressions that can overwhelm one's sense of goodness and humanity" (Sherman 2015, 8).

Hampton and Sherman's definition both converge on the point that moral injury is not necessarily a single transgressive act, such as the traumatic event of sexual assault itself; instead, moral injury permeates through the survivor's moral value and tarnishes their ability to situate themselves in the social environment that allowed them to be sexually

[43] The pluralist account = agency/welfare (stigma). The dignity account = moral worth (stigma). Moral Injury → (Pluralist Account of Harm + Harm to Dignity) = the relational harms of sexual assault that are constituted in the social environment.

assaulted in the first place, i.e., Sherman's view, and then stigmatized and ostracized for being a survivor, i.e., Hampton's view.[44]

On Hampton's view, the harm of moral injury is the degradation of one's moral value such as the harm caused to survivors by the stigmatization of sexual assault in society and the distorted view of sexual assault perpetuated by the neural understanding of memory that underlies using memory dampening interventions are treatment for sexual assault. On Sherman's view, the harm of moral injury is the moral dissonance one experiences after doing, witnessing, or being subject to a morally transgressive act. The following quotations from the survivor's letter about being sexually assaulted by a former Stanford University swimmer that she read aloud in court about how the sexual assault affected her life are examples of the compounded moral injury of sexual assault in accordance with Hampton and Sherman's definitions of moral injury are (Osborne 2016). The quotation below is an example of Hampton's view of moral injury as the degradation of moral value.

> *The thin piece of fabric, the only thing between my vagina and anything else, was missing and everything inside me was silenced. I still don't have words for that feeling.*

An example of Sherman's view of moral injury as experiences of moral dissonance is the following,

> *After a few hours of this, they let me shower. I stood there examining my body beneath the stream of water and decided, I don't want my body anymore. I was terrified of it, I didn't know what had been in it, if it had*

[44] However, Hampton and Sherman's definitions of moral injury diverge on what is harmed, or what the harm is, in moral injury. But, I do not believe this point has much bearing on my argument because I will argue that sexual assault survivors have a compounded moral injury that takes on aspects of both Hampton and Sherman's definitions.

> *been contaminated, who had touched it. I wanted to take off my body like a jacket and leave it at the hospital with everything else.*

These quotations above are examples of the role social comparison plays in understanding the relational harms of sexual assault through the lens of moral injury, which are part of the autobiographical narrative of the survivor. One quotation in particular clearly expresses the relational harm of sexual assault (Osborne 2016).

> *I was not ready to tell my boyfriend or parents that actually, I may have been raped behind a dumpster, but I don't know by who or when or how. If I told them, I would see the fear on their faces, and mine would multiply by tenfold, so instead I pretended the whole thing wasn't real.*

In the quotation above, wanting to spare her loved ones from the suffering tied to sexual assault is the relational harm of sexual assault viewed through the lens of moral injury.

Nazarov et al. points out that there are numerous theories that postulate experiences of guilt and shame, i.e., the psychological distress involved in stigma and moral injury, "requires a sense of social comparison and the ability to interpret others' perspectives, e.g., theory of mind, an ability known to be altered in PTSD" (Nazarov et al. 2015, 6). Interestingly, Nazarov et al. goes on to distinguish between guilt and shame precisely because one affects the first-person perspective, e.g., shame, while the other affects the third-person perspective, e.g., guilt. According to Nazarov et al., shame involves psychological distress that is intrapersonal and eventually leads to the annihilation of the self, while guilt involves psychological distress that is turned outward to interpersonal relations (Nazarov et al. 2015).

The stigmatization of sexual assault survivors and their experiences of moral injury are constituted by both first-person intrapersonal psychological distress, i.e.,

shame, and third-person interpersonal psychological distress, i.e., guilt. Moreover, Miller's claim that, "how one conceptualizes harm is ultimately determined by the guiding conception of the self that an account [of the harm of sexual assault] employs" fits well with Nazarov et al.'s distinction between the first-person perspective of shame and the third-person perspective of guilt, including how both require a sense of social comparison (Miller 2009, 508; Nazarov et al. 2015, 6). If the harm of sexual assault is ultimately determined by the guiding conception of self that an account of harm employs, and the prevailing neural understanding of memory in neuroscience limits the harm of sexual assault to the individual, i.e., medicalization, by perpetuating a reductionist view of sexual assault survivors[45], then the reductionist account that individualizes the harm of sexual assault creates dissonance between the prevailing neural understanding of memory in neuroscience and the relational account of self [46] that guides the conceptualization of the harm of sexual assault in the social context via moral injury. The gap between conceiving of the harms of sexual assault relationally through the lens of moral injury that requires a sense of social comparison and the prevailing neural understanding of memory seems to center around the individualistic conception of self that prevails in neuroscience versus the social conception of self that prevails in the conceptualization of

[45] In Part I Section B through Part II Section A, I argued that the prevailing neural understanding of memory in neuroscience may have the unintended consequence of undermining attempts to alleviate the suffering tied to sexual assault using memory dampening neurotechnological interventions by perpetuating a distorted view of sexual assault that reduces the problem to neurobiological factors and processes in the brain.

[46] The relational account of the self understands the self to as being constituted in the social environment through our interactions with others (Miller 2009). I will discuss the relational harm of sexual assault in Part II Section C as it relates to discussing the autobiographical and biographical narratives of sexual assault.

the harms of sexual assault through the lens of moral injury. However, the existence of this gap may generate another harmful implication when memory dampening neurotechnologies are used as treatment for psychiatric conditions tied to sexual assault. Specifically, it may impact the narratives of sexual assault survivors that constitute their sense of self, which may in turn exacerbate the relational harms of sexual assault.

Section C – The Stories of Us & The Stories about Us

> *In order to have some sense of who we are, we have to have a notion of how we may have become, and of where we are going…. We grasp our lives in a narrative.*
> – Taylor 1989, p. 47

Memory dampening as treatment for sexual assault survivors may undermine healthcare providers' attempt to alleviate the suffering tied to sexual assault because memory dampening affects the interpretation of social norms and the construction of one's sense of self through autobiographical and biographical narratives. Miller's definition of *relational harm* discussed in Part II Section B is useful in understanding the harm biographical narratives about sexual assault can exert on the autobiographical narratives of survivors. Furthermore, the relational harm of sexual assault clearly expresses how the biographical narratives about sexual assault that emerge from traditional gender norms stigmatize survivors by "destabilizing the identities and meanings that constitute a community" (Miller 2009, 513).[47] In a social context, sexual

[47] Culturally speaking, the identities and meanings that constitute a community depend on how sexual assault is perceived. In the United States, the identities of survivors and meanings of sexual assault emerge out of traditional gender norms. Since the 1950s, women in the United States have had their bodies and minds largely taken for granted – all in the name of gender norms. For instance, women's bodies have been continuously sexualized evidenced by the unfortunately time-honored adage "sex sells". It only takes

assault survivors construct their idea of who they are as persons through narration (Nelson 2001).

Although there is no single body of literature or scholarship dedicated to 'narrative ethics', Nelson provides a list of claims made by Narrativists that claim stories of one kind or another are required: "(1) to teach us our duties, (2) to guide morally good action, (3) to motivate morally good action, (4) to justify action on moral grounds, (5) to cultivate our moral sensibilities, (6) to enhance our moral perception, (7) to make actions or persons morally intelligible, and (8) to reinvent ourselves as better persons" (Nelson 2001, 36).[48] These claims about narrative-based conceptions of self emphasize the importance of the stories that survivors tell themselves about sexual assault, as well as the stories that their social communities tell about them. Narratives, or life stories, are interwoven stories and fragments of stories that "we weave around the acts, experiences, and personal characteristics we care about the most…which allows us to make sense, in our own lives, of moral responsibility, self-interested concern, and survival" (Ibid. 76-

---

a walk down to the local newspaper stand to see magazine after magazine with half-naked women on the covers. The bodies of women in the U.S. are continuously regulated. Men are not told what they can and cannot do with their reproductive organs, but women are constantly fighting for things like the right to choose to have an abortion, access to birth control, and whether or not to have children. Moreover, women's minds in the U.S. are continuously taken for granted. For instance, it's still a struggle for women to choose not to have children in order to focus on her career because society perceives this choice as fundamentally contradicting the role of women by forfeiting the ability to reproduce.

[48] Nelson's footnote on page 36 provides references for each of the claims. "For (1) see MacIntyre 1984, Nussbaum 1990, Murray 1997. For (2) see MacIntyre 1984, Nussbaum 1990, Rorty 1990. For (3) see Nussbaum 1990, Hunter 1991. For (4) see MacIntyre 1984. For (5) see Nussbaum 1990, Forty 1989, Charon 1997, Hawkins 1997. For (6) see Nussbaum 1990, Hunter 1991, DePaul 1993, Rorty 1989. For (7) see MacIntyre 1990, Taylor 1989, Frank 1995, Brody 1987. For (8) see Frank 1995, Rorty 1989."

77). Since experiences of sexual assault likely have significant impacts on the way sexual assault survivors make sense of moral responsibility[49], self-interested concern[50], and survival[51], experiences of sexual assault are likely represented in the life stories of sexual assault survivors that allow them to construct their sense of self.

Specifically, there are three primary sorts of narratives: autobiographical, biographical, and master. In short, autobiographical narratives are the stories of our lives that we tell to ourselves and about ourselves. Biographical narratives are the stories of our lives that others tell about us to others or ourselves. Master narratives aid in the construction of personal identity and conception of self because we interject stock plots and character types that we borrow from common stories that embody socially shared understandings (Nelson 2001, 71). In Part II. B., I argued that the stigmatization of sexual assault emerges in a social context around gender norms; furthermore, the narrative-based conception of self suggests that the stigmatization of sexual assault emerges in a social context through master narratives that project gender norms into our autobiographical and biographical narratives. In the case of sexual assault, sexual assault survivors' autobiographical narratives may be impacted by trauma-related stress as well as the stigmatization of sexual assault in the biographical narratives that others tell about sexual assault survivors and vice versa. In this way, the suffering tied to sexual assault is relational, as such, the relational harm of sexual assault is separate from the trauma-

[49] E.g., sexual assault is wrong and should be prosecuted to the highest extent possible.
[50] E.g., sexual assault survivors have a self-interested concern in not being sexually assaulted in the future.
[51] E.g., flourishing after a traumatic experience of sexual assault.

related stress that memory dampening seeks to alleviate. If it is the case that memory dampening interventions like propranolol do not affect relational harm, then memory dampening interventions may not address the harm caused by sexual assault to survivors' ability to construct their idea of who they are through narration.[52]

According to Hilde Lindemann Nelson, personal identities are "complicated narrative constructions consisting of fluid and continual interaction with the many stories and fragments of stories that are created around the things that seem most important, from either the first- or third-person perspective, about a person's life over time" (Ibid. 106). Stories told from the first-person perspective are narratives constructed from autobiographical memories, i.e., a combination of episodic and semantic memories about a person's life; on the other hand, stories told from the third-person perspective are narratives constructed from biographical memory, i.e., memories constituted in the social environment (Nelson 2001, Robillard and Illes 2016). First-person, or autobiographical, narratives can be both backward and forward-looking in that backward-looking stories explain who we are and represent our own personal contribution to our personal identity, while forward-looking stories denote our intentions to carry out specific actions.

While both backward and forward-looking autobiographical narratives help us to understand our notion of self, Marcel Liebermann claims that backward-looking

[52] For instance, if autobiographical narratives of sexual assault are a combination of episodic and semantic memories, and memory dampening affects certain aspects of episodic memory like the fear associated with the traumatic memory of sexual assault, then memory dampening may affect the emotional coloring of the autobiographical narrative of sexual assault. Moreover, if this is the case, then the master narrative of sexual assault will likely prevail because the autobiographical and biographical narrative of sexual assault will be aligned.

autobiographical narratives, or substantive commitments, are most important in constructing one's sense of self and personal identity (Nelson 2001, 74-80, Liebermann 1998). Lieberman argues that the roles and relationships one undertakes are fixed points over the course of one's life that are narratively connected to form one's moral identity, and substantive commitments represented in our backward-looking autobiographical narratives are identity constituting because substantive commitments, e.g., commitments to moral principles, political ideology, and other persons, are developed over the course of one's life and help us understand and make sense of our actions and who we are as persons in a social context. (Nelson 2001, 78; Liebermann 1998). For example, the biographical narratives drawn from master narratives replete with sexism that others may tell about sexual assault survivors such as, 'you're a slut', 'well, you were wearing a short skirt, so maybe you were asking for it', you shouldn't have gotten so drunk', 'boys will be boys', etc., affect the autobiographical narratives that sexual assault survivors themselves.[53] Questions from the first-person perspective such as, 'Is it my fault that I was sexually assault?', 'Am I going to be able to trust anyone?', 'Do people think of me as a slut now?', '*Am* I a slut now?, etc., are examples of how backward-looking autobiographical narratives of sexual assault impact the forward-looking biographical narratives sexual assault survivors tell themselves. Thus, autobiographical and biographical narratives of sexual assault have a reciprocal relationship with one another – if memory dampening affects one, then it may affect the other.

[53] Nelson would likely call this an example of infiltrated consciousness harm to personal identity and conception of self because the stigma and moral injury of sexual assault affects how survivor's identify themselves in a social environment (Nelson 2001, 28-29).

But, even if autobiographical narratives did not influence biographical narratives, and vice versa, biographical narratives can grow to be the master narrative told about sexual assault. Because biographical narratives can become the master narratives told about sexual assault survivors, biographical narratives indirectly affect autobiographical narratives regardless. However, this seems backwards. To me, it seems that the autobiographical narrative of sexual assault should become the master narrative told about sexual assault. If personal identity and one's conception of self is narratively constituted, and the stories other people tell about us affect how we think about ourselves, then the stigmatization and moral injury of sexual assault relational harms because the autobiographical narrative of survivors are commandeered by the biographical narrative of sexual assault's dedication to gender norms. Using memory dampening interventions to treat survivors' psychiatric conditions resulting from sexual assault plays directly into the present biographical narrative of sexual assault that stigmatizes survivors because it infiltrates the autobiographical narrative of sexual assault.

PART III: APPROPRIATE RESPONSES TO SEXUAL ASSAULT

Thus far, my argument has revolved around resistance to the individualization and medicalization of the problem of sexual assault. Patricia Churchland's dedication to locating and understanding the biological markers, or causes, of problems such as premenstrual syndrome or extreme shyness (her examples) for relief " – relief that our own bad character is not, after all, the cause and relief because causality presents a possible chance for change" is an example of how neuroscience's tendency towards an individualistic conception of self creates a gap between understanding the harm of sexual assault as being socially constituted (Churchland 2013, 30-31). As Miller points out, the harm of sexual assault is relational, meaning the harm of sexual assault does not only impact the individual survivor, but impacts the survivors social community as a whole (Miller 2009, 513).

But, if neuroscience adopts a social conception of self, such as the narrative-based conception of self, then we can begin to fill the gap between the neuroscience of memory and the relational harm of sexual assault. Advanced research in methods of therapy that may not fit within the standard medical model of care is of the upmost importance. Social methods of therapy may resist the tendency of healthcare providers to reduce the problem of sexual assault to individual pathology and provide care that extends beyond the individual self to include the relational harms of sexual assault. For instance, sexual

assault survivors suffering from trauma-related stress may benefit from therapies that recognize their psychological and emotional responses to sexual assault are normal and appropriate considering the trauma incurred. But, just because negative psychological and emotional responses to sexual assault may be perfectly normal and appropriate responses does not necessarily mean that survivors of sexual assault would not benefit from psychotherapy as long as the healthcare provider situates survivors as persons in their social contexts.

Section A – Ethical Response to Sexual Assault

A more appropriate and ethically defensible response is to situate sexual assault and sexual assault survivors in their social contexts as persons whose identity is constitutive of the autobiographical narrative they tell to themselves and the biographical narratives others tell about them. Situating sexual assault survivors in their social contexts allows healthcare providers to alleviate suffering by crafting counterstories as narrative strategy (Nelson 2001, Singer 2004). If sexual assault survivors were situated in their social context, then perhaps neuroscience would also be able to alleviate the suffering of survivors, insofar as neuroscience is able to avoid perpetuating a reductionist account of sexual assault.

In my view, the proper response to sexual assault is (1) to remember the trauma of sexual assault in its entirety[54], and (2) healthcare professionals must embrace a narrative-

[54] Andrea Lavazza claims that, "If no one was willing to remember the trauma and negative emotions associated with sexual assault, then the patient risks living in a world where sexual assaults are easily repeated," thereby making it difficult for the patient to

based conception of the self when providing treatment to patients. Yet, if the trauma of sexual assault is understood in a social context, then healthcare providers must consider that reducing the suffering of the sexual assault survivor with neurobiological interventions might reinforce the stigmatization of sexual assault and may make sexual assaults more frequent if the perpetrators think their victims would not suffer that much. Thereby creating a social environment that does not appropriately respond to sexual assault as a traumatic event that must be taken seriously by others and strongly prosecuted. Granted, it does not necessarily follow that survivors of sexual assault should not undergo memory dampening neurotechnological intervention because emotional dysregulation resulting from trauma-related stress is a normal and appropriate response to being sexually assaulted. However, it does seem to follow that survivors of sexual assault should not undergo memory dampening neurotechnological intervention unless the relational impacts of sexual assault, e.g., stigma, negative impacts on attachment relationships, and antiquated gender norms, etc., are addressed as well.[55] This is because remembering sexual assault in its entirety encourages viewing the harms of sexual assault through the lens of moral injury.

---

exercise their autonomy in the future (Lavazza 2015, 5). However, further consideration of this point is beyond the scope of my current discussion. Also, see Lavazza 2016.

[55] To be sure, one could imagine a case in which a survivor of sexual assault would benefit from memory dampening, but that the social impacts are not addressed, and that it is beyond the immediate control of the SA survivor to address the social impacts (e.g., antiquated gender norms). But, if more and more survivors are treated for psychiatric conditions using memory dampeners like propranolol even though the social harms of sexual assault are not in the immediate control of the survivor, then over time the gap between the neural understanding of memory and the social impacts of sexual assault will continue to grow.

Once the sexual assault survivor's emotions are regulated, some healthcare providers might consider the problem to be remedied – but this is simply not the case. The social model of care acknowledges that there may be medical manifestations of socially-constituted problems like sexual assault, but the medical model only acknowledges that social determinants of health explain 'the real problem', i.e., the neurobiological manifestation of emotional dysregulation, instead of acknowledging the cause of the harms of sexual assault is constituted in the social environment. For example, if healthcare providers view survivors of sexual assault as persons socially-constituted through narration, and memory dampening interventions are used to recalibrate the survivors' emotional dysregulation, then family, friends, coworkers, religious community, or anyone else in the survivor's social community, may struggle to reconcile the survivor's newfound emotional regulation with the fact that they know they were sexually assaulted and experienced trauma-related stress as a result. In other words, the autobiographical and biographical narratives of sexual assault may loose its evocation of negative emotional responses, including emotional coloring of narratives of sexual assault in general. In other words, if healthcare providers strictly follow the medical model and provide reconsolidation-based memory dampeners such as propranolol to survivors as treatment for trauma-related stress, then the narrative of sexual assault may lose its evocation of the negative emotions previously associated with the problem of sexual assault over time.

The medicalization of the problem of sexual assault fails to encompass a conception of the self that is socially-constituted being through narration, shaped not only

by our own understanding of who we are, but is also by how others understand and interact with us as moral agents. Moreover, the individualization and medicalization of socially constituted problems such as sexual assault risks causing tension between society and the individual, as well as causing more harm than good to both the individual and society, thereby exacerbating the relational harms of sexual assault. If sexual assault survivors are seen as embodiments of specific psychopathology i.e., the medical model's understanding of the harms caused by sexual assault, then the autobiographical narratives of sexual assault survivors as patients may be damaged and/or ignored. Instead of falling into this dichotomous trap set by simply raising objections to positions that rely on the medical model, the narrative-based conception of self provides a framework for understanding sexual assault survivors as patients and persons in a social context that extends beyond the medical model. Dampening the negative emotional impact of sexual assault may be met with continued or increased prevalence of sexual assault in the future because it fundamentally affects both autobiographical and biographical narratives of sexual assault, which determines how survivors identify themselves, i.e., 'I'm a slut because I was sexually assaulted', and how others identify sexual assault survivors, i.e., 'You're a slut because you were sexually assaulted.'

The narrative-based conception of self suggests that using memory dampening neurotechnological interventions as treatment for trauma-related stress and the resulting emotional dysregulation may damage the sexual assault survivor's sense of self. The life stories, i.e., autobiographical narratives, sexual assault survivors tell about themselves will potentially be affected if the negative emotions of sexual assault are not consolidated

or reconsolidated with the traumatic memory. If memory dampening neurotechnological interventions affect the autobiographical narratives of sexual assault survivors, and the biographical narrative of sexual assault continues to be ridden with stigmatization and medicalization, then memory dampening may create a sort of dissidence between the autobiographical and biographical narratives of sexual assault, which may harm survivors' ability to construct their idea of who they are. Moreover, this damage to one's ability to construct their sense of self is interwoven with the moral injury (i.e., guilt, shame, etc.) felt by sexual assault survivors. Although the symptoms of trauma-related stress can mimic moral injury (Lanius et al., 2010), the moral injury of sexual assault harms survivor's relationally, i.e., the harms of sexual assault are best understood as harms to agency/welfare and dignity viewed through the lens of moral injury.

Embracing a narrative-based conception of sexual assault survivors as person's supports offering treatment for trauma-related stress that addresses the relational harm of sexual assault. However, the medicalization of trauma can only be resisted if healthcare professionals promote research on sexual assault as an inherently social problem and the standards of care are advanced. In order to avoid the future narrative of sexual assault from being devoid of negative emotions associated with the memory of sexual assault, healthcare professionals must embrace a narrative-based social conception of their patients by offering non-medicalized care to patients suffering from trauma-related stress as well as promoting research on the problem of sexual assault and advances in standards of care. If healthcare providers desire to do what's best for their patients suffering from trauma-related stress, then they must recognize that their patients as persons and moral

agents are inherently social and provide treatment methods that extend beyond the medical context.

Counterstories provide a social method of repairing oppressive narratives, such as those that stigmatize and ostracize sexual assault survivors in their social environments. In other words, the critical social responsiveness on the part of healthcare professionals must be understood as "moral agency that engages with the moral agency around it" (Springer 2013, 2-3). Unless healthcare professionals engage with patients suffering from trauma-related stress resulting from sexual assault in a social context instead of the prevailing medical context, healthcare professionals will not be able to critically respond to trauma-related stress resulting from sexual assault as a matter of public rather than private concern (Ibid. 176-177). The narrative strategy proposed by Nelson uses counterstories to root out the influence that the master narrative of sexual assault has on the autobiographical narratives of sexual assault survivors "and replace with stories that depict them as [equally] morally [valuable]" (Nelson 2001, 150). Based on this strategy, the relational harms of sexual assault, such as stigmatization, harms to autonomy, agency, dignity, and moral injury, can be mitigated if the counterstory successfully resists the master narrative of sexual assault.[56]

In order for a counterstory to successfully resist the master narrative of sexual assault, the counterstory must resist viewing survivors as morally suspect and view them as persons whose moral value has not been diminished by sexual assault. The letter

[56] Since master narratives are drawn from the "cultural store", as Nelson puts it, the master narrative of sexual assault is one replete with antiquated gender norms (Nelson 2001, 152). Refer back to my discussion in Part II Section B-C.

written by the father of Brock Turner, the Stanford swimmer referenced in Part II Section B, and read aloud in the courtroom before the sentencing proceeding serves as an example of the master narrative of sexual assault. Below is an excerpt from that letter which I believe provides evidence of how the master narrative of sexual assault damages the identities of survivors (Zielinski 2016).

> *His life has been deeply altered forever. He will never be his happy go lucky self with that easy going personality and welcoming smile…His life will never be the one that he dreamed about and worked so hard to achieve. That is a steep price to pay for 20 minutes of action out of his 20 plus years of life. The fact that he now has to register as a sexual offender for the rest of his life forever alters where he can live, visit, work, and how he will be able to interact with people and organizations…he can do so many positive things as a contributor to society and is totally committed to educating other college age students about the dangers of alcohol consumption and sexual promiscuity. By having people like him educate others on college campuses is how society can begin to break the cycle of binge drinking and its unfortunate results.*

This letter simultaneously attempts to make the rapist the victim by going on about how life changing it will be for his son to have to register as a sex offender and how much his son used to love a good steak but can't manage to stomach food, while stigmatizing the survivor as someone who should've known better than to go to a party and drink a little too much. In this way, the master narrative of sexual assault engages in victim blaming, which assimilates opposition to survivors' autobiographical narratives by undermining their cognitive authority (Nelson 2001, 161). Because she was asking for it by simply existing at a party where everyone, including his own son, was drinking…right?

No. A counterstory, or multiple counterstories, must be crafted to resist this tendency to view survivors as the one who must of done something wrong, must have been sending signals that 'she wanted it', even if she was in no state to consent. The

master narrative relationally harms survivors by blaming them, rather than the perpetrator, for the sexual assault, which stigmatizes and morally injures survivors in the process.

> *But I don't remember, so how do I prove I didn't like it. I was not only told that I was assaulted, I was told that because I couldn't remember, I technically could not prove it was unwanted. And that distorted me, damaged me, almost broke me. It is the saddest type of confusion to be told I was assaulted and nearly raped, blatantly out in the open, but we don't know if it counts as assault yet* (Osborne 2016).

Instead of the master narrative that says 'if she didn't want to get sexually assaulted behind a dumpster, then she shouldn't have drank so much' must be resisted by a counterstory that says something like 'if you don't want to be a sex offender, then don't sexually assault someone', or, instead of teaching women how to avoid being sexually assaulted, maybe we should teach men how to fall prey to a warped conception of masculinity that responds to sexual assault with 'boys will be boys'. These sorts of counterstories would resist the traditional gender norms that underlie much of the relational harms of sexual assault. If having too much to drink is no excuse for the survivor, then having too much to drink is no excuse for the perpetrator to sexually assault someone either. The counterstory, or stories, to the master narrative of sexual assault would address the relational harms of sexual assault that the use of memory dampeners like propranolol are ill-equipped to address. Master narratives cannot be resisted by counterstories without ongoing engagement with the narratives they aim to resist (Nelson 2001, 169). Meaning that if the distorted and reductionist view of sexual assault that is perpetuated in neuroscience by the use of memory dampening interventions

like propranolol as treatment for the harms caused by sexual assault is not resisted, then it may become the master narrative told about sexual assault.

SUMMARY & FUTURE AREAS OF RESEARCH

While much of the discussion in regards to the ethical concerns of memory manipulation has revolved around propranolol, a beta-blocker used to reduce the consolidation of strong emotions, the discussion hit its stride after the release of the President's Council on Bioethics' 2003 report titled *Beyond Therapy: Biotechnology and the Pursuit of Human Happiness*[57] and hit its peak in 2007 when the *American Journal of Bioethics* dedicated an entire issue to ethical considerations in neuroscience (*Beyond Therapy* 2003, AJOB 2007). The U.S. President's Council on Bioethics issued a report in 2003 that largely criticized the use of memory manipulating drugs. The 2003 President's Council claimed that if neurological conditions such as dementia-related memory loss can cripple identity, then selectively altering memory can distort identity (*Beyond Therapy* 2003, 210). "Changing the content of our memories or altering their emotional tonalities, however desirable to alleviate guilty or painful consciousness, could subtly reshape who we are, at least to ourselves" (Ibid. 210).[58]

[57] The U.S. President's Council on Bioethics issued a report in 2003 that largely criticized the use of memory manipulating drugs. Many scholars across various disciplines have critiqued the Council's alarmist objections as pushing a conservative agenda that will result in unnecessary limitations on individual autonomy. However, further consideration of this point is beyond the scope of my current discussion.

[58] Although the claim made here by the President's Council in 2003 suggests memory erasure, I am only focused on memory dampening, which refers to altering the affective coloring of memories rather than the content of memories.

Some scholars echo the Council's concerns about the prospect of using mind-altering drugs in various medical, neurological, and psychological interventions (Buchanan et al. 2000, 188-191; Kramer 1993; Elliott 1998; Parens 1998). Many scholars across various disciplines have critiqued the Council's alarmist objections as pushing a conservative agenda that will result in unnecessary limitations on individual autonomy.[59] Others claim memory manipulation will affect how we develop a true (or, at least, an authentic) sense of self (*Beyond Therapy* 2003, Kramer 1993, Elliott 1998, Parens 1998). Those who claim memory dampening neurotechnological intervention as treatment for neuropsychiatric conditions such as, depression, PTSD, obsessive compulsive disorder, etc., will affect how we develop a true, and/or authentic sense of self base their claim on the assumption that there is this thing inside each one of us with psychological continuity that is our one and true 'self' (Degrazia 2000, Parens 1998, Kramer 1993, Lavazza 2017). Opponents to the latter view that each of us has one *true* and *authentic* 'self' claim neuropsychiatric interventions on memory and personality, parts of what is thought to constitute the self, claim memory dampening interventions are perfectly authentic modes of self-creation (Degrazia 2000).[60] The narrative-based conception of self avoids many of the objections to memory dampening, like those purported by the 2003 President's Council, that assume the existence of one 'true and authentic self'.

[59] However, further consideration of this point is beyond the scope of my current discussion.

[60] I take the positions that there is no psychologically continuous things called the 'true self' because I argue that the self is socially-constituted through narration. I will argue that 'the self' can only be understood in a social context because it is socially constituted through narration, which is informed by one's memories. See Part II Section B and C.

The debate regarding the effects memory manipulation will have on self-told narratives about one's life has not received as much attention as cognitive and performance enhancements. Doctors are treating sexual assault survivors increasingly with memory dampening neurotechnology in an attempt to alleviate the suffering tied to sexual assault. Moreover, treating sexual assault survivors using memory dampening neurotechnology is consistent with healthcare providers' ethical obligations. Even if neurotechnological interventions effectively reduce the intrapersonal suffering tied to sexual assault with minimal side effects, healthcare providers should fulfill their ethical obligation to nonmaleficence and reduce the patients suffering by understanding the trauma of sexual assault in a social context. Otherwise, the use of memory dampening as treatment for the harms of sexual assault may not address the relational harms caused by the social nature of the problem of sexual assault. Novel memory dampening neurotechnological intervention on the emotional dysregulation resulting from trauma-related stress characterized as post-traumatic stress disorder (PTSD) tied to sexual assault is well within the ethical obligations of healthcare providers as they stand today. Yet, alleviating the suffering tied to sexual assault using reconsolidation-based memory dampening neurotechnological interventions may generate harmful ethical implications since the medical model of care prevails in clinical settings.

Specifically, memory dampening intervention as treatment for sexual assault survivors may undermine the alleviation of suffering tied to sexual assault overtime by perpetuating a distorted and reductionist view of sexual assault. The problem of sexual assault is not rooted in the neuropsychiatric manifestation of emotional dysregulation

from trauma-related stress resulting from sexual assault, rather, the problem of sexual assault is rooted in the social environment because sexual assault impacts survivors relationally in ways that are best understood in a social context, such as stigma, problems creating and maintaining meaningful relationships, and moral injury. The harm of sexual assault is felt beyond the individual survivor; the survivor's social community as a whole is harmed. In a social context, sexual assault survivors construct their idea of who they are as persons through narration, which may be affected by memory dampening neurotechnologies. But, healthcare providers may be increasingly tempted to view sexual assault survivors through the lens of the medical model, like they tend to do with disability.

A more appropriate and ethically defensible response is to situate sexual assault survivors in their social context as persons according to a narrative-based conception of self, which allows healthcare providers to alleviate suffering through remembering the trauma of sexual assault by crafting counterstories as a narrative strategy in order for neuroscience to avoid perpetuating a reductionist account of sexual assault. An appropriate social response to sexual assault would be eliminating the stigmatization of sexual assault by placing the moral injury, i.e., guilt and shame, on it's proper and fitting moral agent, the perpetrator. Succeeding in this requires the collective memory of society to reflect the negative emotions associated with the memories of individual sexual assault survivors. Healthcare providers have an obligation to help sexual assault survivors channel their autobiographical narrative of sexual assault into action that reduces the likelihood of sexual assault in the future. In this way, healthcare providers respect the

social nature of the problem of sexual assault and avoid being used as tools by big pharmaceutical companies looking to profit off pushing memory dampening neurobiological intervention as treatment for sexual assault survivors. However, these issues require future research.

There are many areas for future research on the relationship between memory and conceptions of self – too many for me to list here. However, I have included a list of questions that I would like to explore in the future.

- If the trauma of sexual assault is understood in a social context, and reducing the suffering of the sexual assault survivor with neurobiological interventions may reinforce the stigmatization of sexual assault, then could memory dampening as treatment for sexual potentially make sexual assaults more frequent if the perpetrators think their victims would not suffer that much?

- If healthcare providers offer sexual assault survivors presenting symptoms of trauma-related stress the option of dampening their negative emotional responses to sexual assault, and more and more sexual assault survivors undergo reconsolidation-based memory manipulation, then could the collective memory of sexual assault in society potentially be blunted to the negative emotions associated with sexual assault?

- Does the medicalization of sexual assault sets the stage for the pharmaceutical industry to exploit the trauma faced by sexual assault survivors for profit by targeting the population for specific pharmaceutical interventions that claim to reduce their suffering? This would also situate healthcare providers as the middle-man between big pharma and the sexual assault survivor, which has the potential to manipulate clinicians to prescribe memory dampening interventions to patients suffering from trauma-related stress, thereby obscuring their responsibility and obligation to do what is best for their patients.

- Do counterstories have the ability to project the stigmatization of sexual assault onto the perpetrator rather than its current target, survivors?

- Are counterstories as narrative strategy applicable to combat veterans? If so, how?

REFERENCES

American Psychiatric Association (APA). (2013). *Diagnostic and Statistical Manual of Mental Disorder*, 5th edition: Arlington, VA: 265-280.

American Psychiatric Association (APA). (2013). *The Principles of Medical Ethics: With Annotations Especially Applicable to Psychiatry*, Arlington, VA. [https://www.psychiatry.org/psychiatrists/practice/ethics].

American Psychological Association (APA). 2016. *Ethical standards of psychologists*. Washington, D.C., (effective January 2017). [http://www.apa.org/ethics/code/]

Agren, Thomas. Jonas Engman, Andreas Frick, Johannes Bjorkstrand, Elna-Marie Larsson, Tomas Furmark, and Mats Fredrikson. (2017). "Disruption of Reconsolidation Erases a Fear Memory Trace in the Human Amygdala." *Science*, 337(6101): 1550-1552. [http://science.sciencemag.org.mutex.gmu.edu/content/sci/337/6101/1550.full.pdf].

AJOB 2007. Evers, Kathinka. "Perspectives on memory manipulation: using beta-blockers to cure post-traumatic stress disorder." *Cambridge Quarterly of Healthcare Ethics* 16, no. 02 (2007): 138-146; Henry, Michael; Fishman, Jennifer R.; Youngner, Stuart J. "Propranolol and the Prevention of Post-Traumatic Stress Disorder: Is it Wrong to Erase the 'Sting' of Bad Memories?" *The American Journal of Bioethics*, 7:9 (2007): 12-20; Trachtman, Howard "Spinoza's Passions," *The American Journal of Bioethics*, 7:9 (2007): 21-23; Hall, Wayne & Carter, Adrian "Debunking Alarmist Objections to the Pharmacological Prevention of PTSD," *The American Journal of Bioethics*, 7:9 (2007): 23-25; Kolber, Adam. "Clarifying the Debate Over Therapeutic Forgetting," *The American Journal of Bioethics,* 7.9 (2007): 25-27; Rosenberg, Leah. "Necessary Forgetting: On the Use of Propranolol in Post-Traumatic Stress Disorder Management." *The American Journal of Bioethics*, 7.9 (2007): 27-28; Bell, Jennifer A. "Preventing Post-Traumatic Stress Disorder or Pathologizing Bad Memories?" *The American Journal of Bioethics*, 7:9 (2007): 29-30; Craigie, Jillian. "Propranolol, Cognitive Biases, and Practical Decision-Making," *The American Journal of Bioethics*, 7:9 (2007): 31-32; Kabasenche, William P.

"Emotions, Memory Suppression, and Identity," *The American Journal of Bioethics*, 7:9 (2007): 33-34; Hurley, Elisa A. "The Moral Costs of Prophylactic Propranolol," *The American Journal of Bioethics*, 7:9 (2007): 35-36; Warnick, Jason E. "Propranolol and Its Pote*ntial Inhibition of Positive Post-Traumatic Growth,"* The American Journal of Bioethics, 7:9 (2007): 37-38; Liao, Matthew S. & Wasserman, David T. "Neuroethical Concerns about Moderating Traumatic Memories," *The American Journal of Bioethics*, 7:9 (2007): 38-40; Tenenbaum, Evelyn M. & Reese, Brian. "Memory-Altering Drugs: Shifting the Paradigm of Informed Consent," *The American Journal of Bioethics*, 7:9 (2007): 40-42.

Basile, K., & Smith, S. (2011). "Sexual violence victimization of women: prevalence, characteristics, and the role of public health and prevention." *American Journal of Lifestyle Medicine*, 5(5): 407-417.

Beyond Therapy: Biotechnology and the Pursuit of Happiness. (2003). A Report of the President's Council on Bioethics, Washington, D.C. [http://biotech.law.lsu.edu/research/pbc/reports/beyondtherapy/beyond_therapy_final_report_pcbe.pdf]

Bourtchuladze, R. B. Frenguelli, Julie A. Blendy, D. Cioffi, G. Schutz, Aj Silva. (1994). "Deficient long- term memory in mouse with a targeted mutation of the cAMP response element-binding protein." *Cell*, 79: 59-68.

Breiding, M. J., Smith, S. G., Basile, K. C., Walters, M. L., Chen, J., & Merrick, M. T. (2014). *Prevalence and characteristics of sexual violence, stalking, and intimate partner violence victimization*. National Intimate Partner and Sexual Violence Survey, United States, 2011. MMWR Surveillance Summaries, 63(8), 1-18.

Brunet, Alain. Scott Orr, Jacques Tremblay, Kate Roberson, Karim Nader, and Roger Pitman. (2008). "Effect of post-retrieval propranolol on psychophysiologic responding during subsequent script-driven traumatic imagery in post-traumatic stress disorder." *Journal of Psychiatric Research*, 42: 503-506. [http://ac.els-cdn.com.mutex.gmu.edu/S0022395607000921/1-s2.0-S0022395607000921-main.pdf?_tid=11bbc496-56a7-11e7-bdf2-00000aacb35e&acdnat=1498066301_c09fdeb00c92ba85799ed2b555eedc01].

Buchanan, A., Brock, D., Daniels, N., & Wikler, D. (2000). *From Chance to Choice: Genetics and Justice*, Cambridge: Cambridge University Press, 188-191.

Cabrera, Laura Y. (2011). "Memory Enhancement: The Issues We Should Not Forget About." *Journal of Evolution and Technology*, 22(1) (December): 97-109.

Cahill, Ann J. (2001). *Rethinking Rape*; Ithaca, NY: Cornell University Press.

Cahill L, McGaugh JL. (1998). "Mechanisms of emotional arousal and lasting declarative memory." *Trends Neuroscience*, 1998, 21: 294-9. 10.1016/S0166-2236(97)01214-9. [https://pdfs.semanticscholar.org/6b27/f7ccbc68e6bf9bc1538f7ed8d1ca9d8e563a.pdf].

Clarke, Adele E., Shim, Janet K., Mamo, Laura, Fosket, Jennifer R., & Fishman, Jennifer R. (2003). "Biomedicalization: Technoscientific Transformations of Health, Illness, and U.S. Biomedicine." *American Sociological Review*, 68:2 (April): 161-194. [https://destructural.files.wordpress.com/2010/06/biomedicalization-technoscientific-transformations-of-health-illness-and-u-s-biomedicine.pdf]

Cohon, Rachel. (2004). "Disability: I. Ethical and Societal Perspectives." *Encyclopedia of Bioethics*. Ed. Stephen G. Post. Vol. 2:3, New York: Macmillan Reference USA: 655-668. [http://go.galegroup.com.mutex.gmu.edu/ps/retrieve.do?tabID=T003&searchId=R8&searchType=BasicSearchForm&userGroupName=viva_gmu&inPS=true&prodId=GVRL.xlit.gvrlmod&contentSet=GALE&docId=GALE|CX3402500146]

Churchland, Patricia. (2013). *Touching a Nerve: Our Brains, Our Selves*, New York: W.W. Norton & Company.

Czajkowski R., B. Jayaprakash, B. Wiltgen, T. Rogerson, M.C. Guzman-Karlsson, A.L. Barth, J.T. Trachtenberg, A.J. Silva. (2014). "Encoding and storage of spatial information in the retrosplenial cortex." *Proc National Acadamies of Science*, 111: 8661-8666.

Crow TJ. (1968). "Cortical synapses and reinforcement: a hypothesis." *Nature*, 219: 736-7. 10.1038/219736a0.

Debiec, Jacek. David E.A. Bush, and Joseph E. LeDoux. (2011). "Noradrenergic Enhancement of Reconsolidation in the Amygdala Impairs Extinction of Conditioned Fear in Rats – a Possible Mechanism for the Persistence of Traumatic Memories in PTSD." *Depression and Anxiety*, 28(3): 186-193.

De Brigarde, F. (2014). "Is memory for remembering? Recollection as a form of episodic hypothetical thinking." *Synthese*, 191: 155-185.

Degrazia, David. (2000). "Prozac, Enhancement, and Self-Creation." *Hastings Center Report*, 30(2): 34-40 [https://philosophy.columbian.gwu.edu/sites/philosophy.columbian.gwu.edu/files/image/Prozac_Enhancement_and_Self-Creation.pdf]

Elliott, C. (1998). "The Tyranny of Happiness: Ethics and Cosmetic

Psychopharmacology." In *Enhancing Human Traits: Ethical and Social Implications*, ed. E. Parens, Washington D.C.: Georgetown University Press:177-188.

Elsey, James. & Kindt, Merel. (2016). "Manipulating Human Memory Through Reconsolidation: Ethical Implications of a New Therapeutic Approach." *American Journal of Bioethics: Neuroscience*, 7(4): 225-236. [http://www.tandfonline.com/doi/pdf/10.1080/21507740.2016.1218377?needAccess=true]

Fujii, T., M. Moscovitch, L. Nadel. (2000), "Memory consolidation, retrograde amnesia, and the temporal lobe." *Handbook of Neuropsychology*, 2nd edition, Vol. 2. Memory and its disorders. Elsevier Science Publishers, pp. 223-250.

Goering, Sara. (2015). "Rethinking disability: the social model of disability and chronic disease." *Current Reviews in Musculoskeletal Medicine*, 8: 134-138. [https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4596173/pdf/12178_2015_Article_9273.pdf]

Hampton, Jean. (1999). "Defining Wrong and Defining Rape," in *A Most Detestable Crime: New Philosophical Essays on Rape*, ed. Keith Burgess-Jackson (New York: Oxford University Press).

Hanson, Rochelle F., and Cristin S. Adams. (2016). "Childhood Sexual Abuse: Identification, Screening, and Treatment Recommendations in Primary Care Settings." *Primary Care in Clinical Office Practice*, 43: 313-326. [http://ac.els-cdn.com.mutex.gmu.edu/S0095454316000178/1-s2.0-S0095454316000178-main.pdf?_tid=4cd2389c-56a4-11e7-9f53-00000aab0f6c&acdnat=1498065112_56ba0f6e1211ac958dae3462c5f8bd4c].

Hayes, Steven C. Kelly G. Wilson, Elizabeth V. Gifford, and Victoria M. Follette. (1996). "Experiential Avoidance and Behavioral Disorders: A Functional Approach to Diagnosis and Treatment." *Journal of Consulting and Clinical Psychology*, 64(6): 1152-1168. [http://psycnet.apa.org.mutex.gmu.edu/journals/ccp/64/6/1152.pdf].

Henry, Michael. Jennifer Fishman, and Stuart J. Younger. (2007). "Propranolol and the Prevention of Post-Traumatic Stress Disorder: Is it Wrong to Erase the 'Sting' of Bad Memories?" *The American Journal of Bioethics*, 7(9): 12-20.

Hurley, Elisa A. (2010). "Combat Trauma and the Moral Risks of Memory Manipulating Drugs." *Journal of Applied Philosophy*, 27(3): 221-245.

Izquierdo I, Medina JH. (1997). "Memory formation: the sequence of biochemical events in the hippocampus and its connection to activity in other brain structures." *Neurobiology of Learning and Memory*, 68: 285-316. 10.1006/nlme.1997.3799. [http://www.sciencedirect.com/science/article/pii/S1074742797937990].

Josselyn, S.A., C. Shi, W.A. Carlezon Jr., R.L. Neve, E.J. Nestler, M. Davis. (2001). "Long-term memory is facilitated by cAMP response-element binding protein overexpression in the amygdala." *Journal of Neuroscience*, 21: 2404-2412.

Kahana, M. J. (2017). Memory search. In J. H. Byrne (Ed.), *Learning and Memory: A Comprehensive Reference, Second Edition*. Elsevier. [http://memory.psych.upenn.edu/files/pubs/Kaha17.pdf]

Kim, Kamin. Arne Ekstrom, and Nitin Tandom. (2016). "A network approach for modulating memory processes via direct and indirect brain stimulation: Toward a casual approach for the neural basis of memory." *Neurobiology of Learning and Memory*, 134: 162-177. [http://ac.els-cdn.com.mutex.gmu.edu/S1074742716300247/1-s2.0-S1074742716300247-main.pdf?_tid=c484e3f4-569e-11e7-b53b-00000aab0f02&acdnat=1498062736_cab6e40cb3c144529f96944b4218ade1].

Kobler, Adam. (2010). "Therapeutic Forgetting: The Legal and Ethical Implications of Memory Dampening." *Vanderbilt Law Review*. Vol. 59(5): 1561-1626. [http://brooklynworks.brooklaw.edu/cgi/viewcontent.cgi?article=1572&context=faculty]

Kobler, Adam. (2007). "Clarifying the Debate Over Therapeutic Forgetting." *The American Journal of Bioethics*, 7(9): 25-27.

Kramer, P.D. (1993). *Listening to Prozac*, New York: Viking Press.
Larriviere, Dan. Michael Williams, Matt Rizzo, and Richard J. Bonnie. 2009. "Responding to requests from adult patients for neuroenhancements." *Neurology*, 73 (September). [https://www.aan.com/uploadedFiles/Website_Library_Assets/Documents/6.Public_Policy/1.Stay_Informed/2.Position_Statements/3.PDFs_of_all_Position_Statements/adult.pdf]

Lanius, Ruth A., Eric Vermetten, Richard Loewenstein, Bethany Brand, Christian Schmahl, J. Douglas Bremner, and David Spiegal. (2010). "Emotional Modulation in PTSD: Clinical and Neurobiological Evidence for a Dissociative Subtype." *American Journal of Psychiatry*, 167: 640-647.

Larriviere D, Williams MA, Rizzo M, Bonnie RJ. (2009). "Responding to requests from

adult patients for neuroenhancements: guidance of the Ethics, Law and Humanities Committee." *Neurology*, 73:1406–1412. [https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2769556/].

Lavazza, A. (2017). "Moral Bioenhancement Through Memory-editing: A Risk for Identity and Authenticity?" *Topoi: An International Review of Philosophy*, doi:10.1007/s11245-017-9465-9. [https://link.springer.com/article/10.1007/s11245-017-9465-9].

Lavazza, A. (2016). "What We May Forget When Discussing Human Memory Manipulation." *American Journal of Bioethics Neuroscience*, 7(4): 249-251)

Lavazza, A. (2015). "Erasing traumatic memories: when context and social interests can outweigh personal autonomy." *Philos. Ethics Humanit. Med.*, 10(3): [https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4340636/].

Liebermann, Marcel S. (1998). *Commitment, Value, and Moral Realism*. Cambridge: Cambridge University Press.

Lonergan M. H., Olivera-Figueroa L. A., Pitman R. K., Brunet A. (2013). "Propranolol's effects on the consolidation and reconsolidation of long-term emotional memory in healthy participants: a meta-analysis." *Journal of Psychiatry and Neuroscience*, 38: 222–231. 10.1503/jpn.120111. [https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3692719/].

Mahabir, Megan. Andrea R. Ashbaugh, Daniel Saumier, and Jacques Tremblay. (2016). "Propranolol's impact on cognitive performance in post-traumatic stress disorder." *Journal of Affective Disorders*, 192: 98-103. [http://ac.els-cdn.com.mutex.gmu.edu/S0165032715308582/1-s2.0-S0165032715308582-main.pdf?_tid=2c412bb4-56a5-11e7-98df-00000aacb360&acdnat=1498065487_6f753a7de9000c89f04d952b8739b362].

Mahabir, Megan. Alan Tucholka, Lisa Shin, Pierre Etienne, and Alain Brunet. (2015). "Emotional face processing in post-traumatic stress disorder after consolidation impairment using propranolol: A pilot fMRI study." *Journal of Anxiety Disorders*, 36: 127-133. [http://ac.els-cdn.com.mutex.gmu.edu/S088761851530027X/1-s2.0-S088761851530027X-main.pdf?_tid=d8afb350-56a7-11e7-909f-00000aab0f02&acdnat=1498066635_f9430b8fd6c353a71dc18880d261eb5a].

Manning, J. R., Norman, K. A., and Kahana, M. J. (2015). The role of context in episodic memory. In M. Gazzaniga (Ed.), *The cognitive neurosciences, fifth edition*. MIT Press. [http://memory.psych.upenn.edu/files/pubs/MannEtal15.pdf]

Maren, Stephen. (2011). "Seeking a Spotless Mind: Extinction, Deconsolidation, and

Erasure of Fear Memory." *Neuron*, 70: 830-845. [http://ac.els-cdn.com/S0896627311003904/1-s2.0-S0896627311003904-main.pdf?_tid=09c326f6-569f-11e7-ab71-00000aab0f01&acdnat=1498062852_b8ca652996d272bcdd08ae32bc1ba009].

McGaugh, JL. (2004). "The amygdala modulates the consolidation of memories of emotionally arousing experiences." *Annu Rev Neurosci*., 27: 1-28. 10.1146/annurev.neuro.27.070203.144157. [https://pdfs.semanticscholar.org/f4b0/4b0af588fd8b89e26b39ef95170aedc59cc2.pdf].

Miller, Sarah Clark. (2017). "Reconsidering Dignity Relationally." *Ethics and Social Welfare*, 11(2): 108-121.

Miller, Sarah Clark. (2009). "Moral injury and relational harm: Analyzing rape in Darfur." *Journal of Social Philosophy*, 40(4): 504-523.

Mondino, Marine, Djamila Bennabi, Emmanuel Poulet, Filipe Galvao, Jerome Brunelin, and Emmanuel Haffen. (2014). "Can transcranial direct current stimulation (tDCS) alleviate symptoms and improve cognition in psychiatric disorders?" *The World Journal of Biological Psychiatry*, 15(4): 261-275.

Moscovitch, M. (2007). "Why the engram is elusive: memory does not exist until it is recovered." In Tulving A., Roediger HL III, Dudai Y, Fitzpatrick SM (eds) *Science of memory: concepts*, Oxford, UK: Oxford University Press, pp. 17-22.

Moses, Tabitha, and Judy Illes. (2017). "Ethics, Ethicists, and Professional Organizations in the Neurological Sciences." *American Journal of Bioethics: Neuroscience*, 8(1): 3-11.

Nadel, L. And M. Moscovitch. (1997). "Memory consolidation, retrograde amnesia and the hippocampal complex." *Current Opinions in Neurobiology*, 7: 217-227.

Nader, Karim., Hardt, Oliver., & Lanius, Ruth. (2013). "Memory as a new therapeutic target." *Dialogues in Clinical Neuroscience*, 15:4 (December): 475-486. [https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3898685/]

National Sexual Violence Resource Center (NSVRC). (2016). "What is Sexual Violence." *Fact Sheet* (April). [http://www.nsvrc.org/sites/default/files/saam_2016_what-is-sexual-violence_0.pdf]

Nazarov A, Jetly R, McNeely H, Kiang M, Lanius R, McKinnon MC. (2015). "Rise of

morality in the experiences of guilt and shame within the armed forces." *Acta Psychiatrica Scandinavica*, 132: 4-19.

Nazarov A, Frewen P, Parlar M, et al. (2014). "Theory of mind performance in women with posttraumatic stress disorder related to childhood abuse." *Acta Psychiatrica Scandinavica*, 129: 193-201.

Nelson, Hilde Lindemann. (2001). *Damaged Identities: Narrative Repair*. Cornell University Press, New York.

Nelson K, Fivush R. (2004). "The emergence of autobiographical memory: a social cultural developmental theory." *Psychological Review*, 111: 486-511.

Noonan, David. (2014). "Meet the Two Scientists Who Implanted a False Memory Into a Mouse." *Smithsonian Magazine,* (November). [http://www.smithsonianmag.com/innovation/meet-two-scientists-who-implanted-false-memory-mouse-180953045/]

Office of Justice Programs (OJP), Bureau of Justice Statistics, United States Department of Justice (USDOJ). (2017). *Rape and Sexual Assault*. [https://www.bjs.gov/index.cfm?ty=tp&tid=317#terms_def]

Oliver, M. (1996). *Understanding disability: from theory to practice*. New York: St. Martin's Press. [https://link.springer.com/book/10.1007%2F978-1-349-24269-6]

Osborne, Samuel. (2016). "Stanford University rape case: Victim's letter in full." *The Independent* (6 June) [http://www.independent.co.uk/news/world/americas/stanford-university-rape-case-the-victims-letter-in-full-a7067146.html].

Osuch, Elizabeth A., Brenda E. Benson, David A. Luckenbaugh, Marilla Geraci, Robert M. Post, and Una McCann. (2009). "Repetitive TMS combined with exposure therapy for PTSD: a preliminary study." *Journal of anxiety disorders*, 23(1): 54-59.

Parens, Erik. (1998). "Is Better Always Good? The Enhancement Project." *The Hastings Center Report*, 28(1): S1-S17. [https://www.jstor.org/stable/3527981?seq=1#page_scan_tab_contents]

Pitman, Roger K., Mohammed R. Milad, Sarah A. Igoe, Mark G. Vangel, Scoot P. Orr, and Alina Tsareva. (2011). "Systematic Mifepristone Blocks Reconsolidation of Cue-Conditioned Fear; Propranolol Prevents This Effect." *Behavioral Neuroscience*, 125(4): 632-638.

Ravindran, Lakshmi N., and Murray B. Stien. (2009). "Pharmacotherapy of PTSD: Premises, principles, and priorities." *Brain Research*, 1293: 34-39. [http://ac.els-cdn.com.mutex.gmu.edu/S000689930900599X/1-s2.0-S000689930900599X-main.pdf?_tid=6610e930-56a8-11e7-b21a-00000aab0f01&acdnat=1498066872_92fb4b50cf43943c234dff1e0c253886].

Robillard, Julie M., & Illes, Judy. (2016). "Manipulating Memories: The Ethics of Yesterday's Science Fiction and Today's Reality." *American Medical Association Journal of Ethics*, 18:12 (December): 1225-1231.

Rosenbaum RS, McKinnon MC, Levine B, Moscovitch M. (2004). "Visual imagery deficits, impaired strategic retrieval, or memory loss: disentangling the nature of an amnesic person's autobiographical memory deficit." *Neuropsychologia*, 42: 1619–1635.

Rosenbaum RS, Kohler S, Schacter DL, Moscovitch M, Westmacott R, Black SE, Gao F, Tulving E. (2005). "The case of K.C.: contributions of a memory-impaired person to memory theory." *Neuropsychologia*, 43: 989–1021.

Sacco, Lisa N. (2015). "The Violence Against Women Act: Overview, Legislation, and Federal Funding." *Congressional; Research Service*, (26 May) [https://fas.org/sgp/crs/misc/R42499.pdf].

Sano, Y., J.L. Shobe, M. Zhou, S. Huang, T. Shuman, D.J. Cai, P. Golshani, M. Kamata, A.J. Silva. (2014). "CREB regulates memory allocation in the insular cortex." *Curr Biology*, 24: 2833-2837.

Schick, Ari. Adrienne Asch, and David Wasserman. (2014). "Models of" in *Bioethics*. Ed. Bruce Jennings. Vol. 2 4th ed. Farmington Hills, MI: Macmillian Reference USA: 866-874.

Sekeres, M.J. Morris Moscovitch, and Gorder Winocur. (2017). "Mechanisms of Memory Consolidation and Transformation." N. Axmacher and B. Rasch (eds.), *Cognitive Neuroscience of Memory Consolidation*, Studies in Neuroscience, Psychology and Behavioral Economics: 17-44. [https://www.researchgate.net/profile/Melanie_Sekeres/publication/313542134_Mechanisms_of_Memory_Consolidation_and_Transformation/links/58b6ff8ba6fdcc2d14d6fc8c/Mechanisms-of-Memory-Consolidation-and-Transformation.pdf].

Shapira, N. A., M. S. Okun, D. Wint, K. D. Foote, J. A. Byars, D. Bowers, U. S. Springer et al. (2006). "Panic and fear induced by deep brain stimulation." *Journal of Neurology, Neurosurgery & Psychiatry*, 7(3): 410-412.

Sherman, Nancy. (2015). *Afterwar: Healing the Moral Wounds of Our Soldiers,* New

York: Oxford University Press.

Singer JA, Blagov P, Berry M, Oost KM. (2013). “Self-defining memories, scripts, and the life story: narrative identity in personality and psychotherapy.” *Journal of Personality*, 81(6): 569-582. [http://digitalcommons.conncoll.edu/cgi/viewcontent.cgi?article=1014&context=psychfacpub].

Springer, Elise. (20130. *Communicating Moral Concern: An Ethics of Critical Responsiveness*, MIT Press: Cambridge, MA.

Steenen, Serge A., Arjen J. Van Wijk, Geert JMG van der Heijden, Roos van Westrhenen, Jan de Lange, and Ad de Jongh. (2016). “Propranolol for the treatment of anxiety disorders: Systematic review and meta-analysis.” *Journal of Psychopharmacology*, 30(2): 128-139.

Taylor, Charles. (1989). *Sources of Self*, Cambridge: Harvard University Press.

Tully, Keith. and Vadim Bolshakov. (2010). “Emotional enhancement of memory: how norepinephrine enables synaptic plasticity.” *Molecular Brain*, 3(15) [https://molecularbrain-biomedcentral-com.mutex.gmu.edu/articles/10.1186/1756-6606-3-15].

United States Code of Federal Regulations. 10 U.S.C. §920 – Article 120. “Rape and sexual assault generally.” [https://www.law.cornell.edu/uscode/text/10/920]

United States Department of Justice. Office on Violence Against Women. [https://www.justice.gov/ovw/sexual-assault]

Widge, Alik S., Darin D. Dougherty, and Chet T. Moritz. (2014). "Affective brain-computer interfaces as enabling technology for responsive psychiatric stimulation." *Brain-Computer Interfaces*, 1(2): 126-136.

Zielinksi, Alex. (2016). “The Stanford Rapist’s Father Offers An Impossibly Offensive Defense of His Son.” *Think Progress*, [https://thinkprogress.org/the-stanford-rapists-father-offers-an-impossibly-offensive-defense-of-his-son-b3a7a254d2ad].

BIOGRAPHY

Sarah W. Denton graduated from Cookeville High School, Cookeville, Tennessee in 2008. She received her Bachelor of Arts in Philosophy and Political Science from Emory & Henry College in 2013. She was employed as a graduate research assistant at the Institute for Philosophy and Public Policy at George Mason University for a year and a half and received her Master of Arts in Philosophy from George Mason University in 2017. Her primary interests of study revolve around bioethics, end-of-life decision-making, and the intersections between philosophy, ethics, and neuroscience.

Sarah's role with the institute includes web design, general support in sponsored program activity, such as administration and aiding in the procurement of prospective funding opportunities. She serves as the Project Assistant for IPPP's project, C*oming Home: Dialogues on the Moral, Psychological, and Spiritual Impacts of War,* which is an NEH-supported program engaging U.S. veterans in dialogue on the impacts of war on the warrior.

She has presented and gave a three-minute flash talk titled, "Ethical Considerations for the Growing Use and Addictive Properties of Captagon in the Middle East", co-authored with Drs. Nadine Kabbani and Jesse Kirkpatrick, at the International Neuroethics Society's 2016 Annual Meeting in San Diego, California. Sarah also co-authored a forthcoming chapter with Dr. Jesse Kirkpatrick titled, "War and Terrorism", in *Posthuman: Emerging Technologies and the Boundaries of Homo Sapiens*.

Scholarship & Awards

2016-2017 GMU Department of Philosophy, Outstanding Master's Student

2016-2017 GMU College of Humanities and Social Science Dean's Change Fellowship

2015-2016 Alexandria Scottish Rite Masons Scholarship